

A Review of the Hardware, Iron and Steel Trades.

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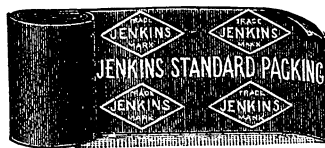
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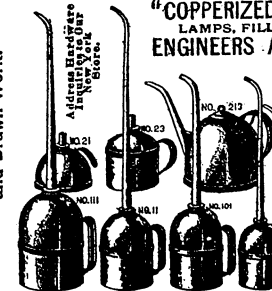
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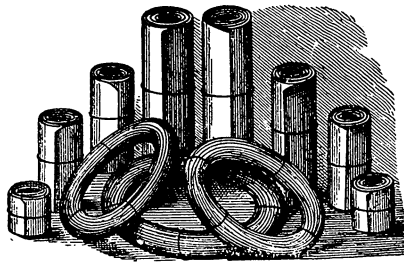
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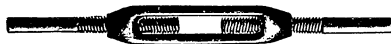
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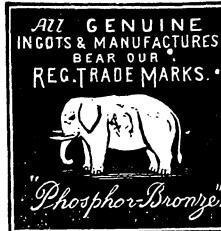
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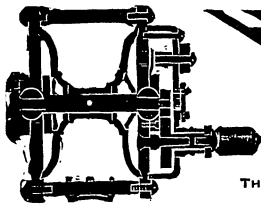
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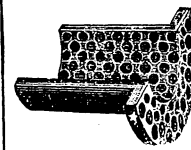


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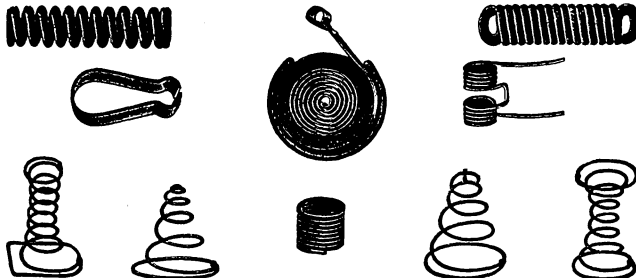
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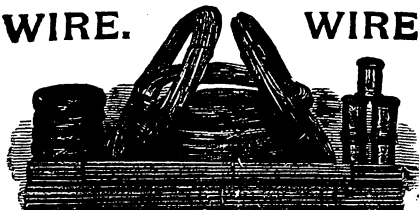
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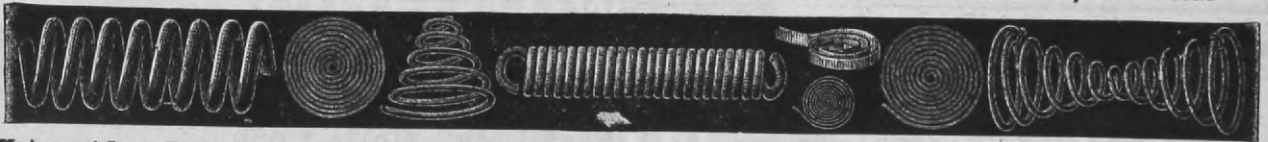
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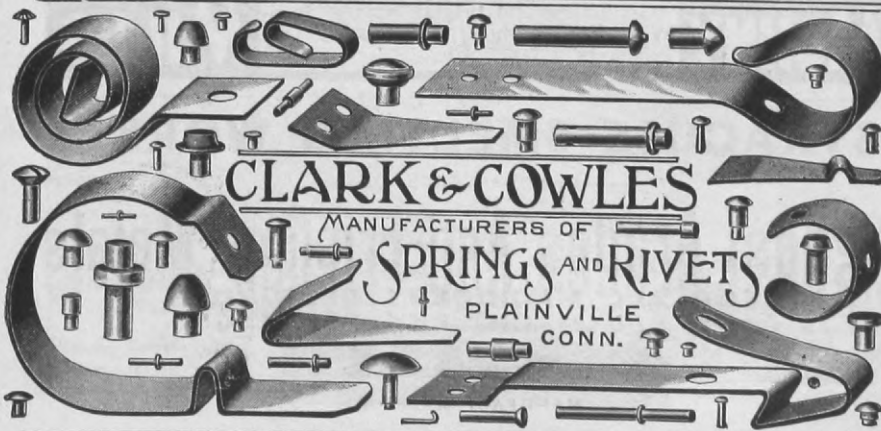
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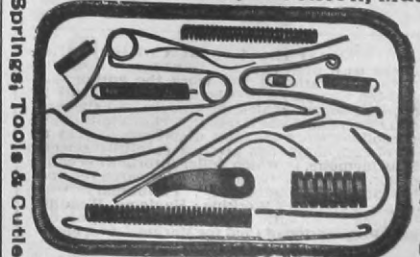
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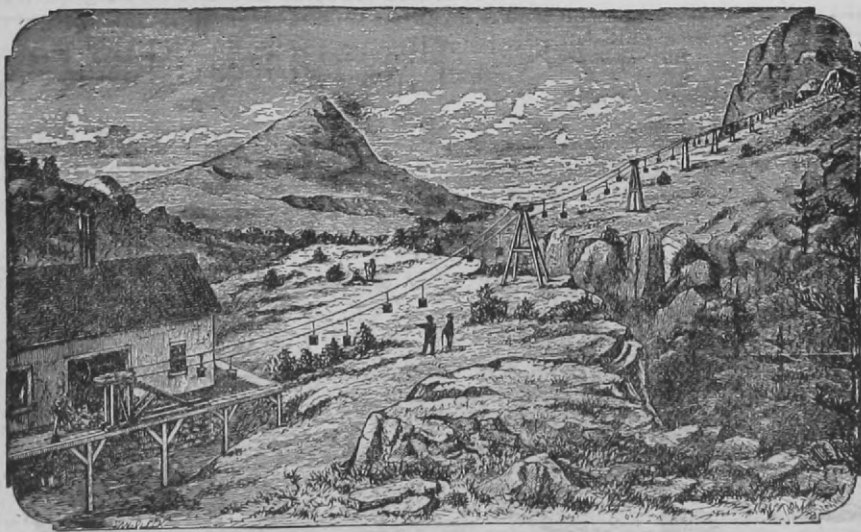
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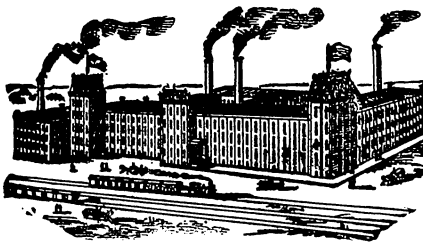
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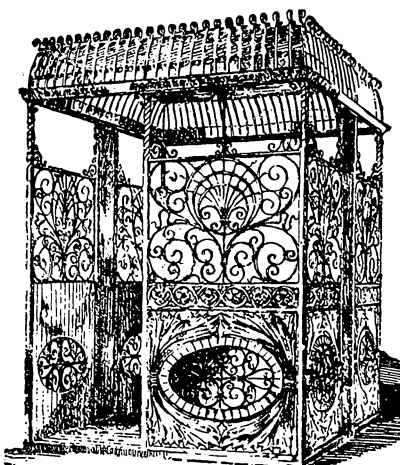
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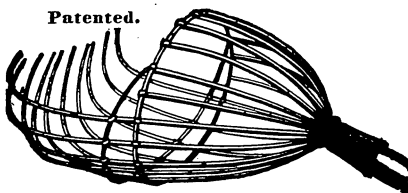


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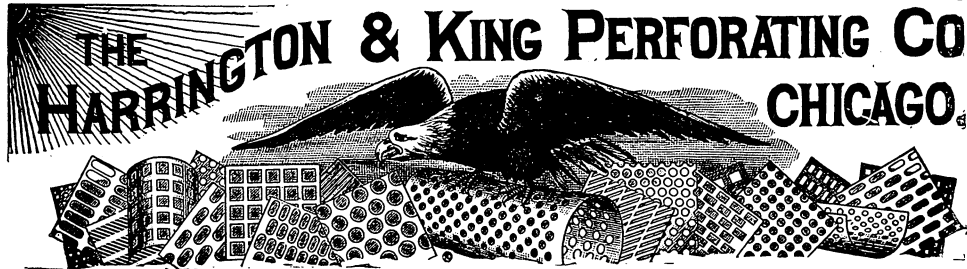
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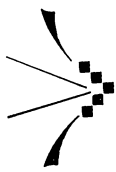
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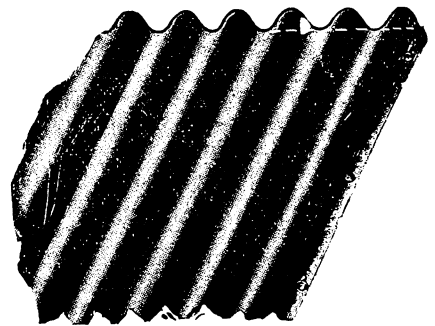


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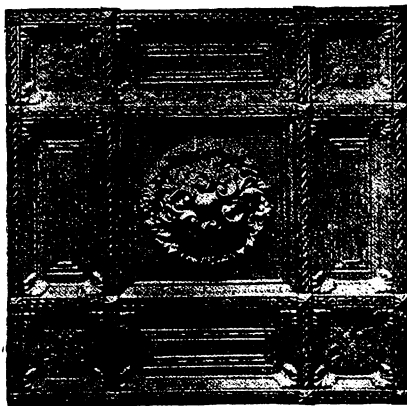
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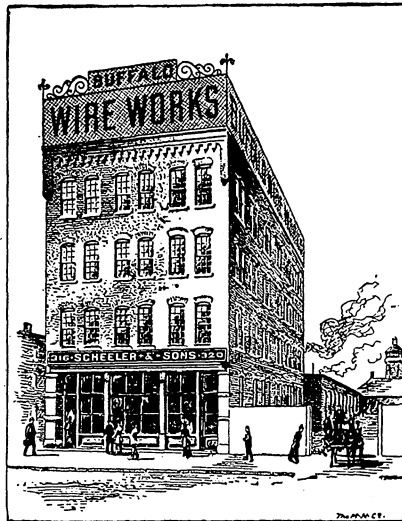
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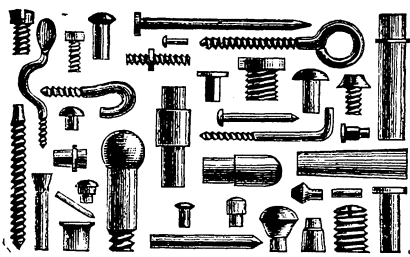
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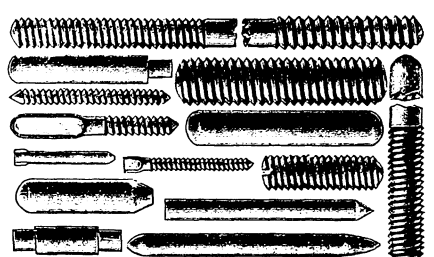
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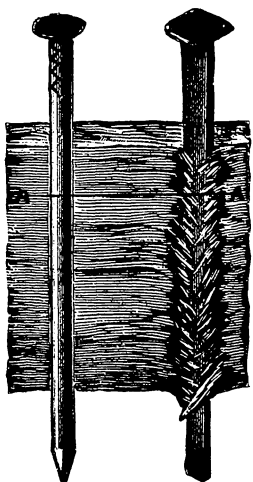
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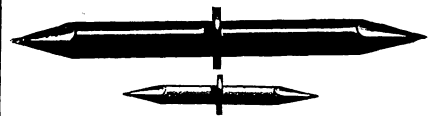
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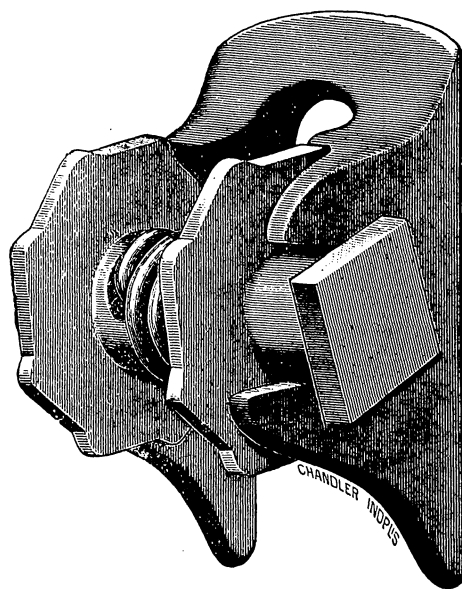
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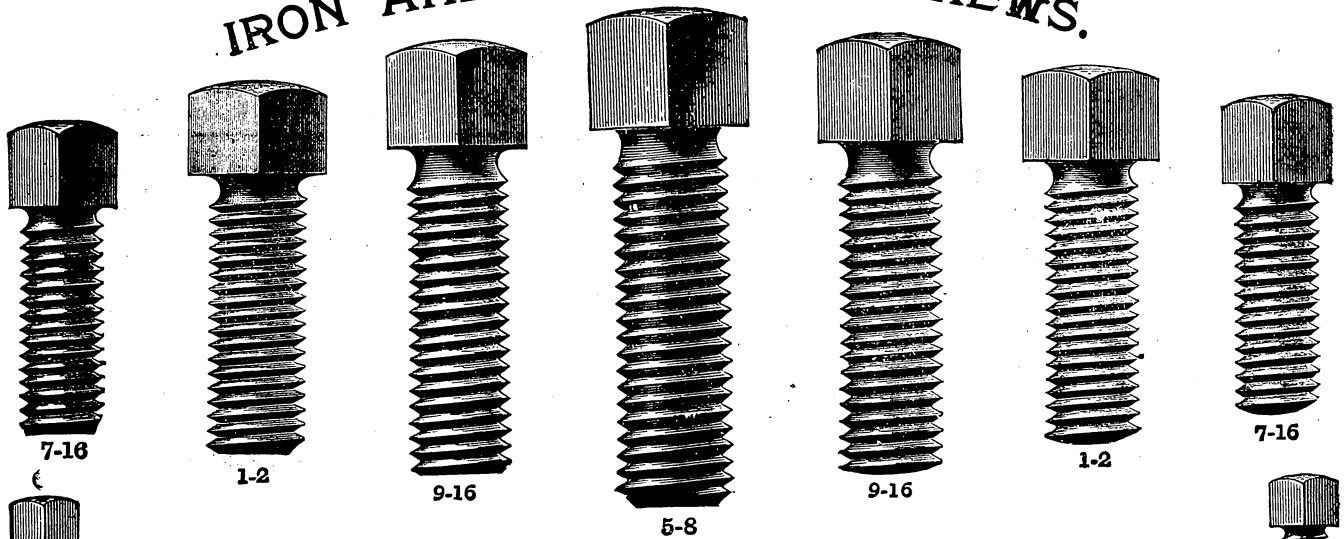
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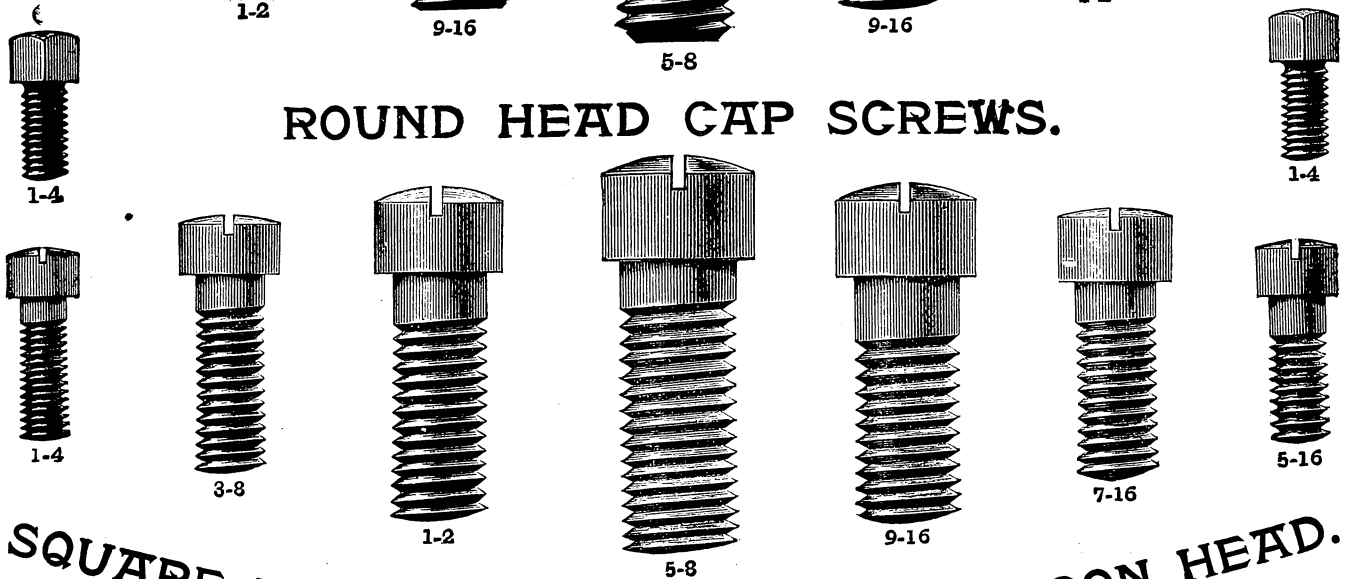
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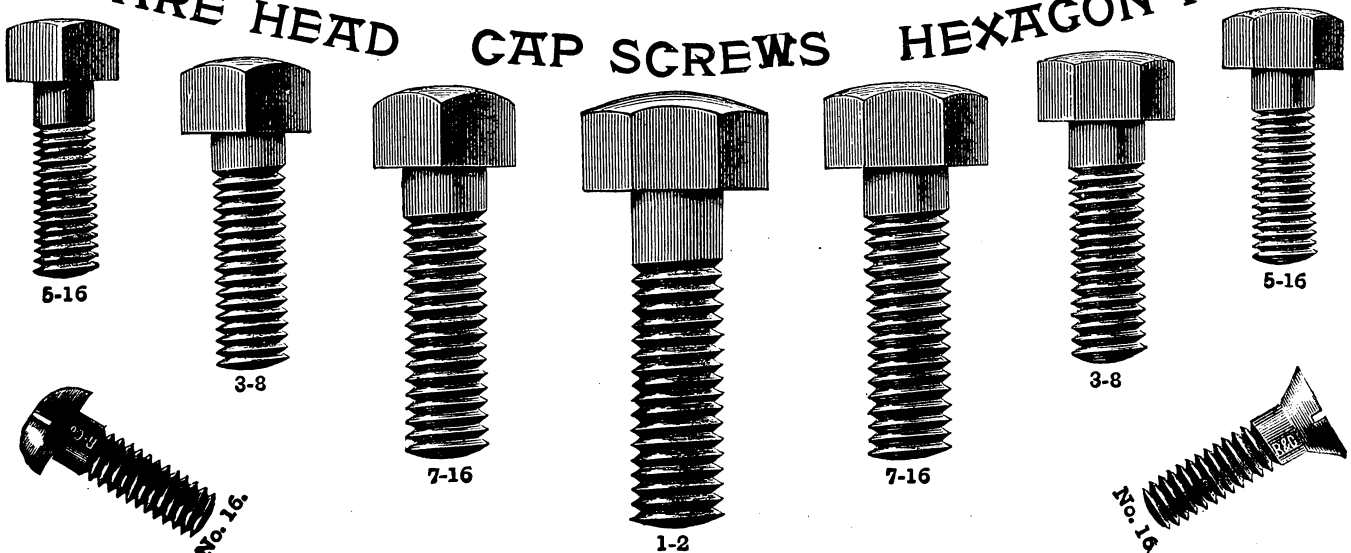
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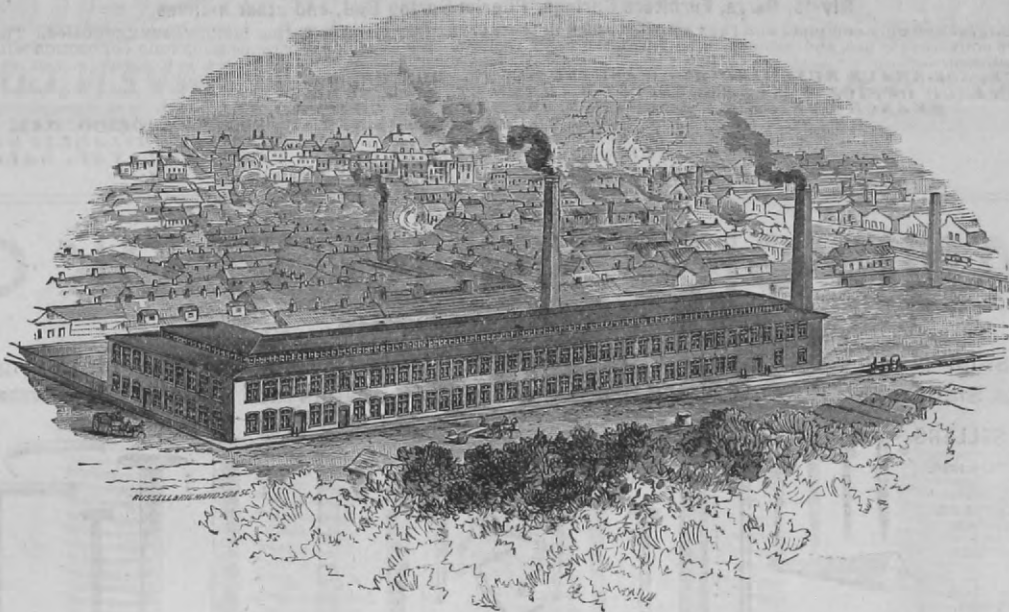
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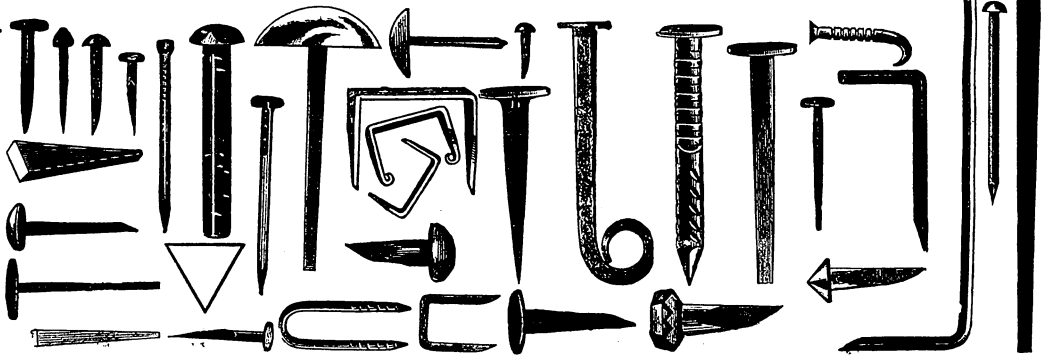
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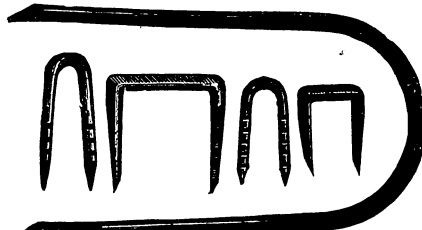
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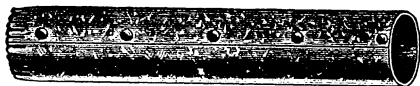
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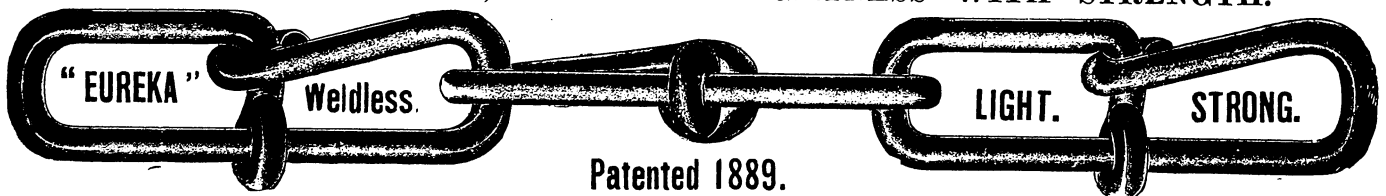
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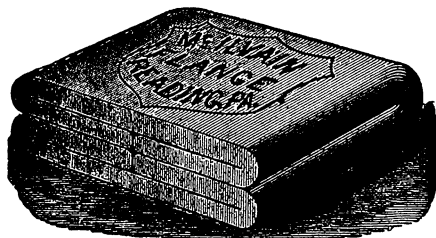
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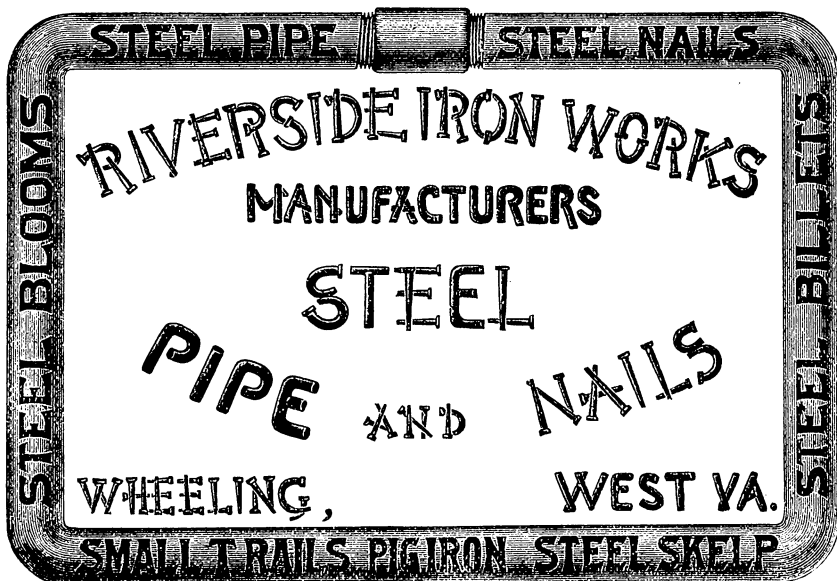
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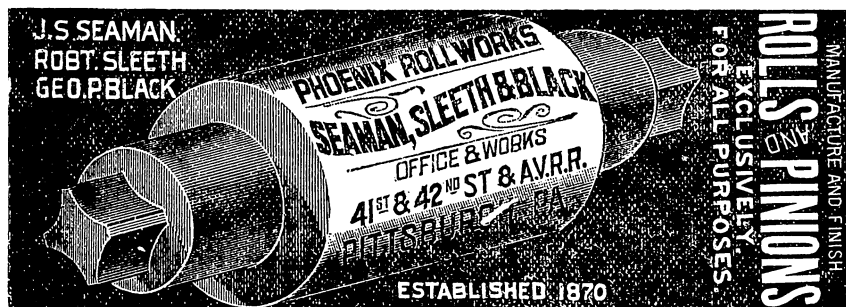
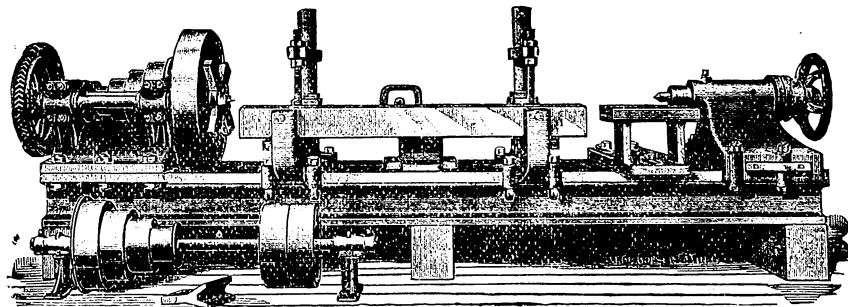
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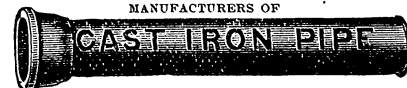
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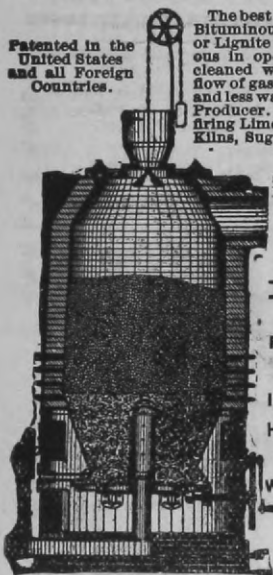
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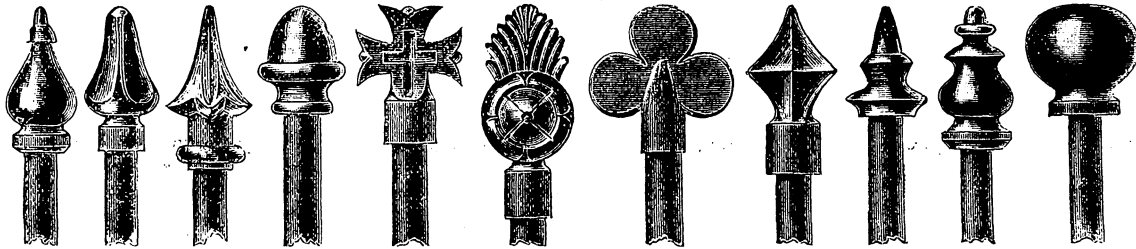
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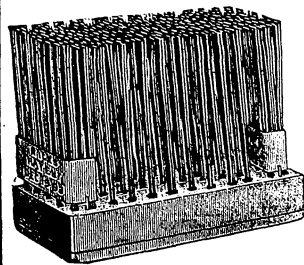
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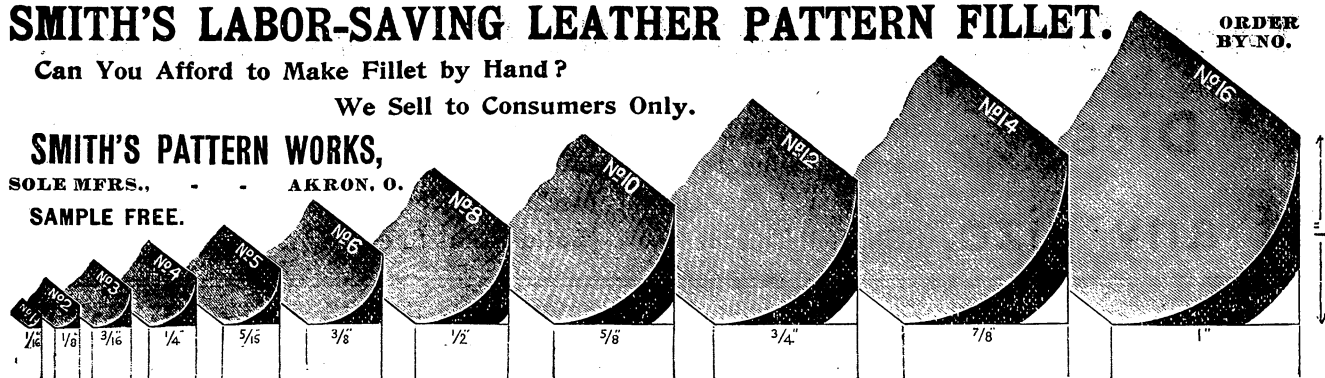
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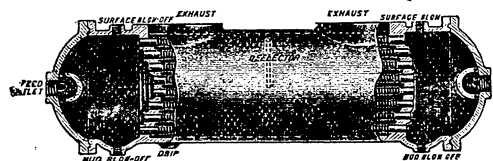
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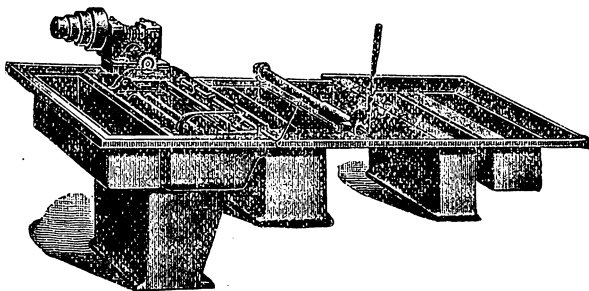
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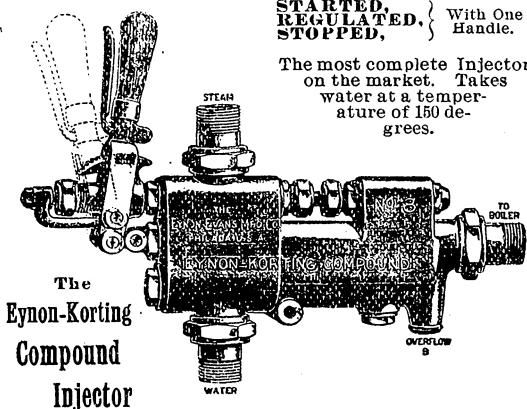
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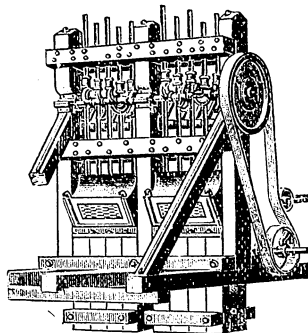
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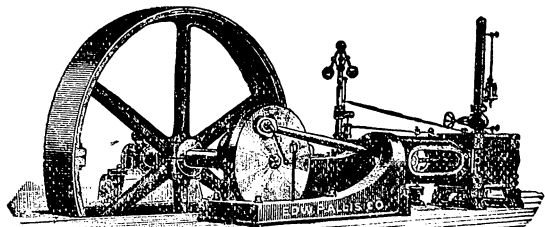
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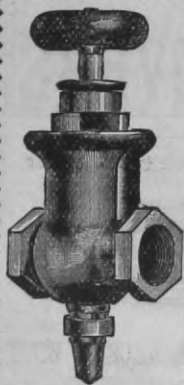
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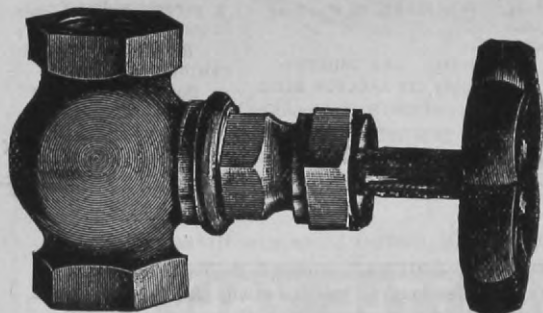
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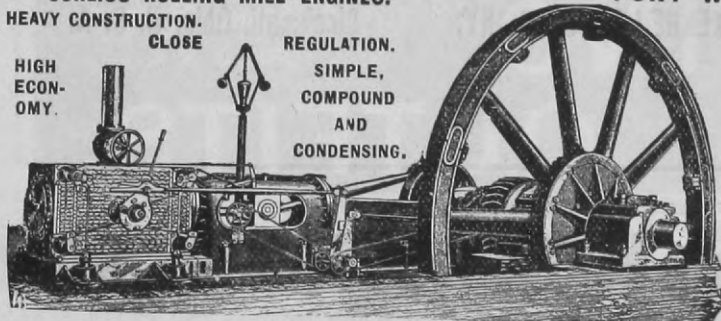
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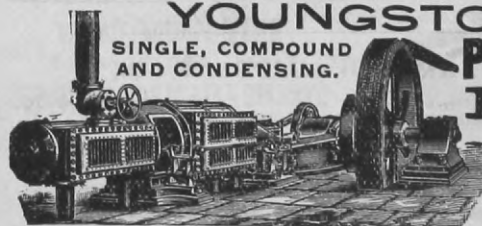
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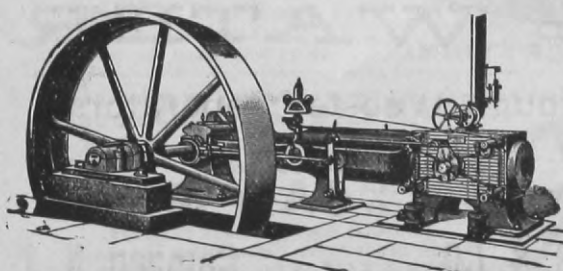
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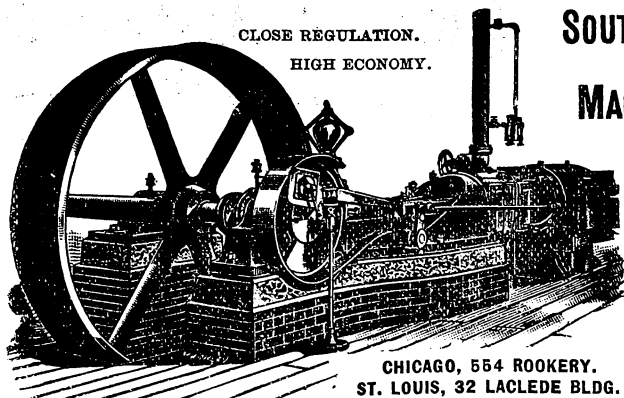
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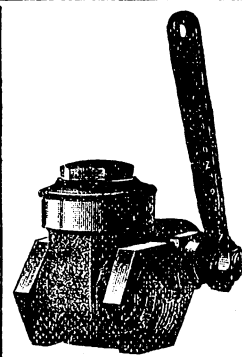
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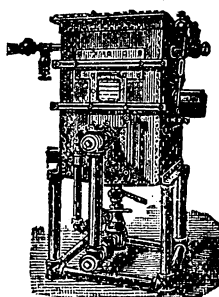
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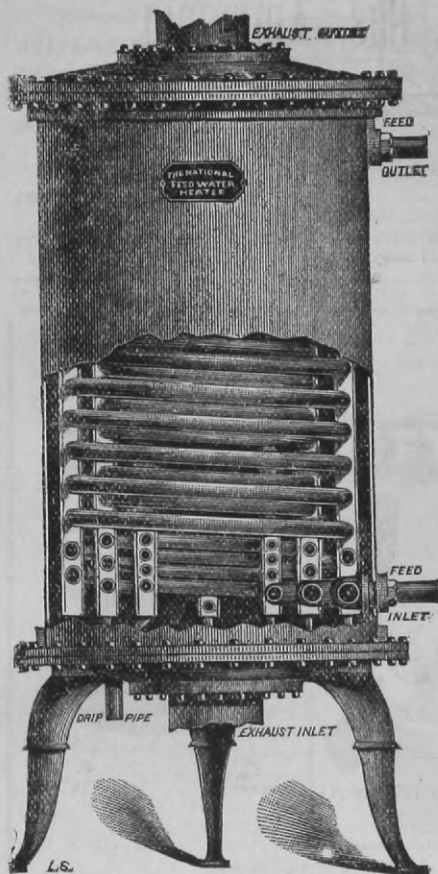
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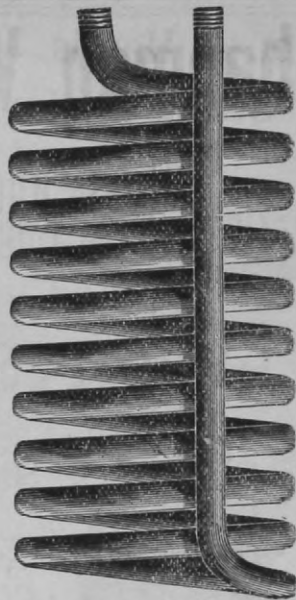
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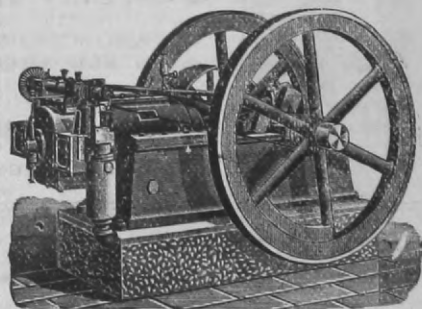
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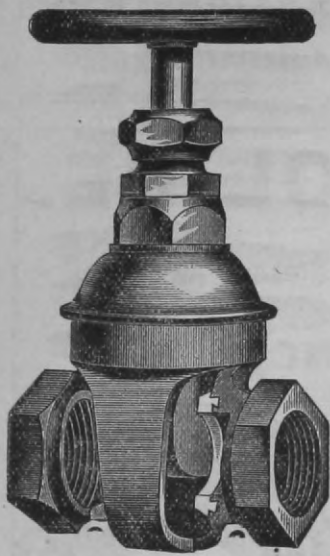
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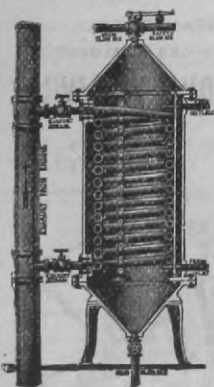
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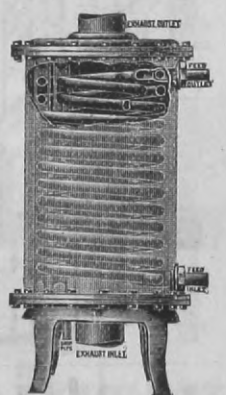
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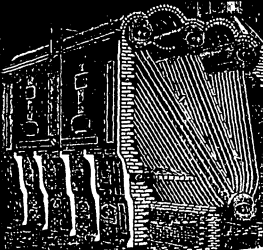
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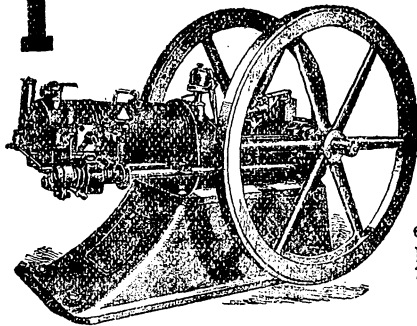
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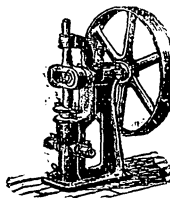
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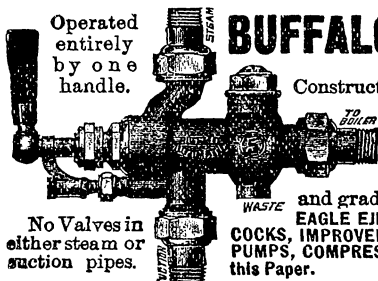
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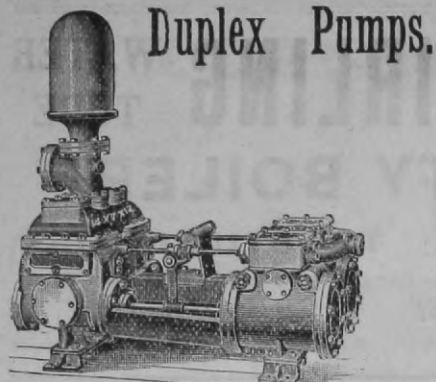
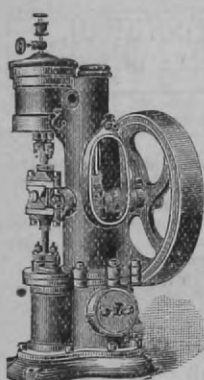
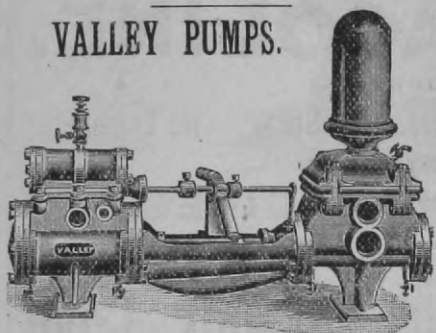
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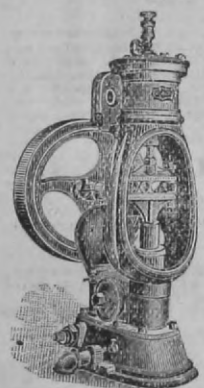
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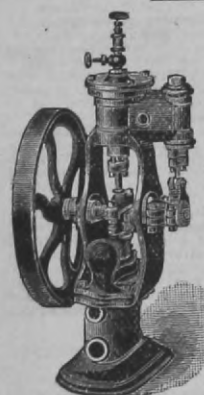
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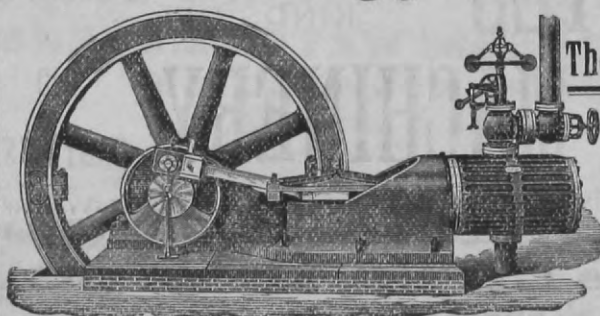
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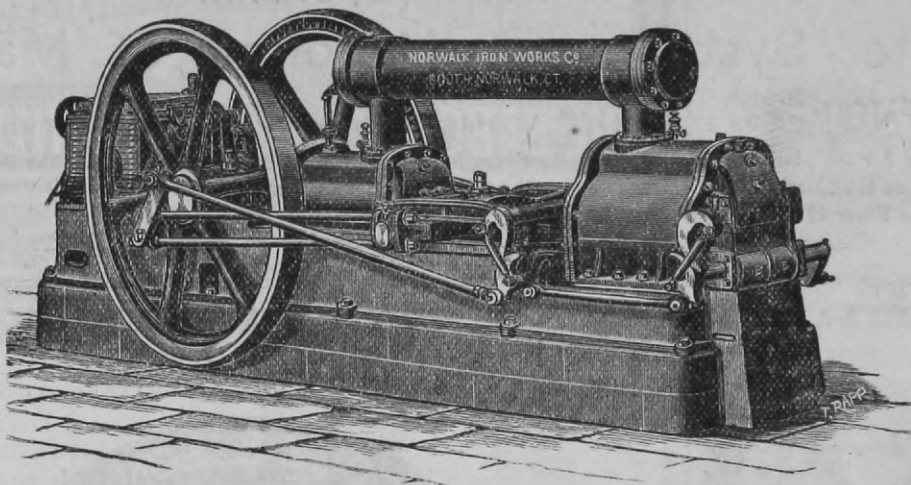
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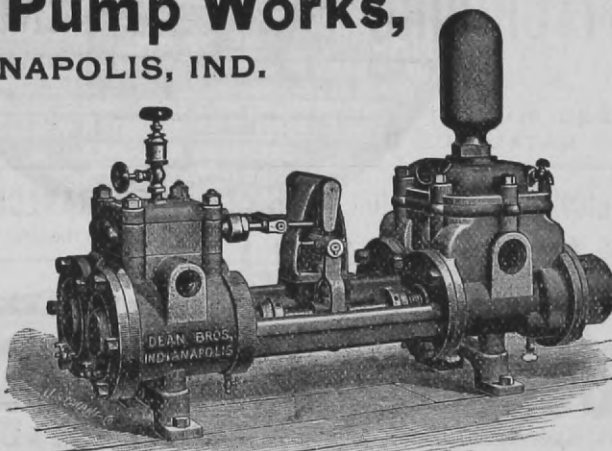
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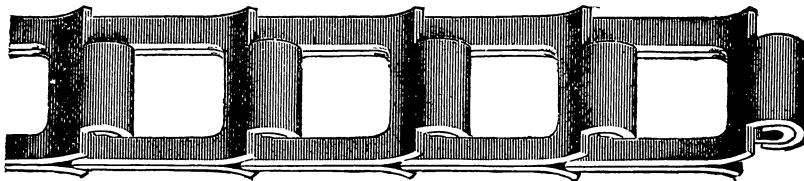
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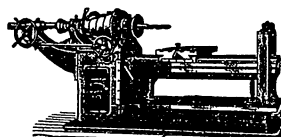
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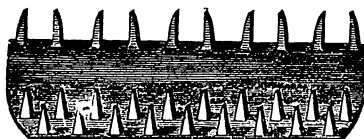
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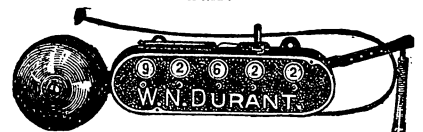
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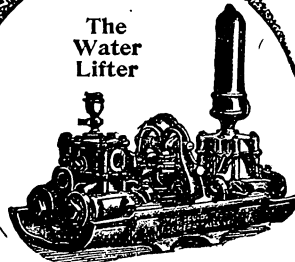
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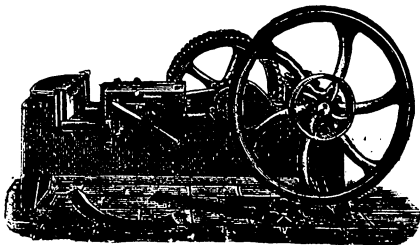
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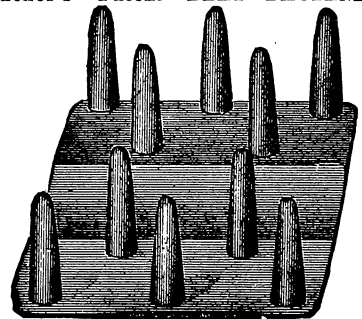
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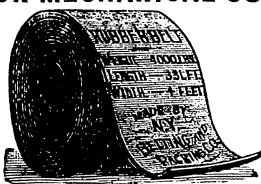
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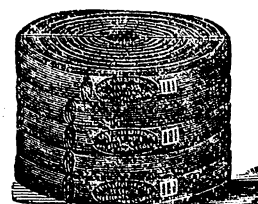


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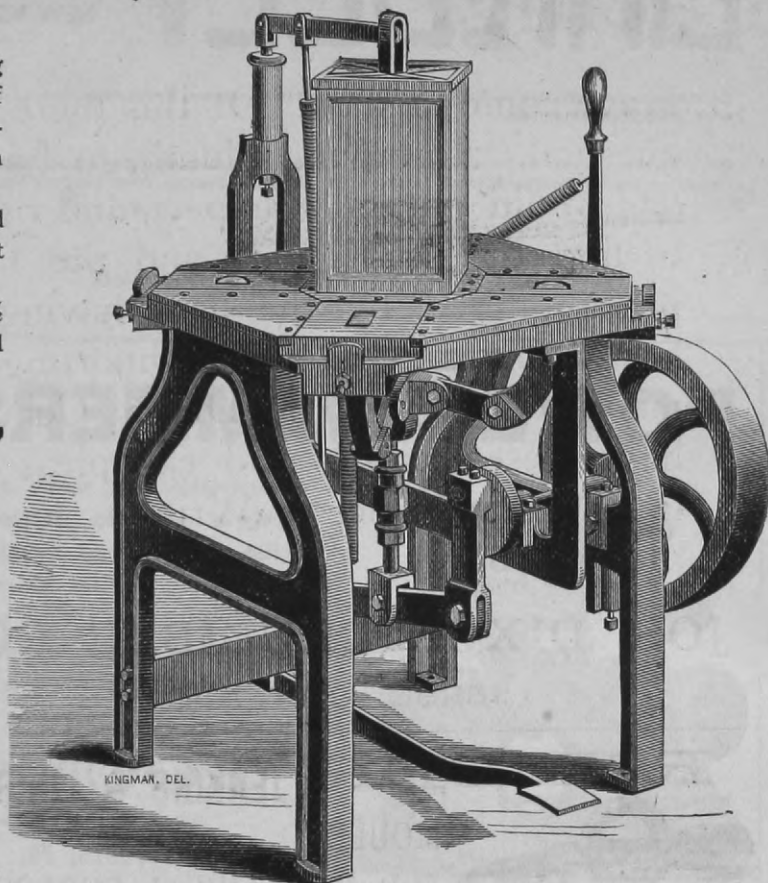
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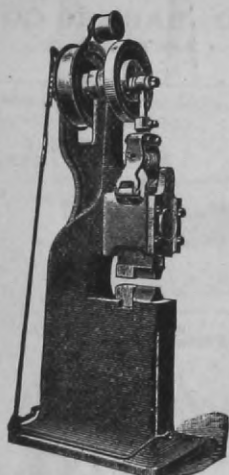
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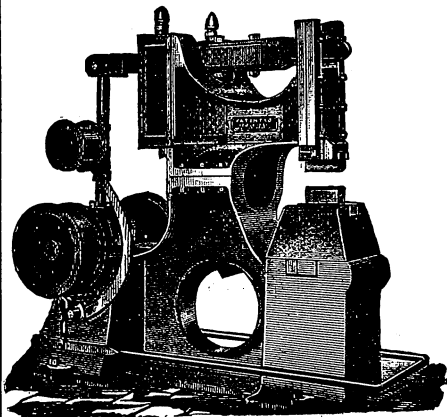
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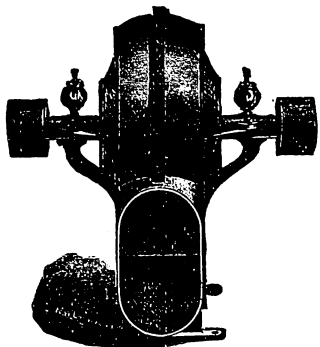
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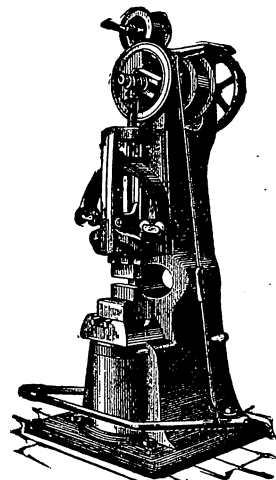
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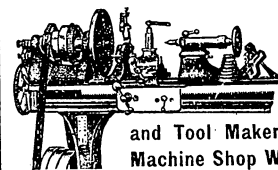
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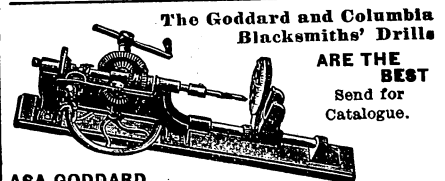
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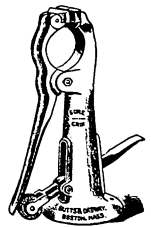
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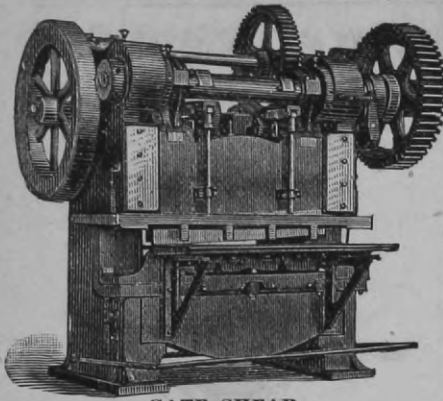
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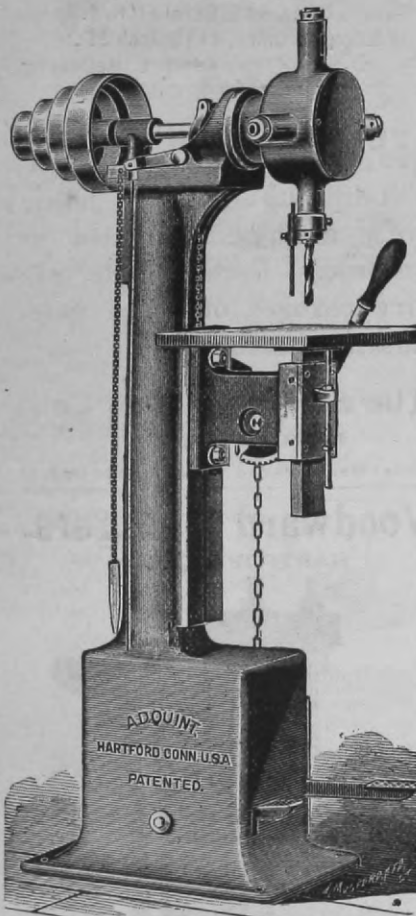
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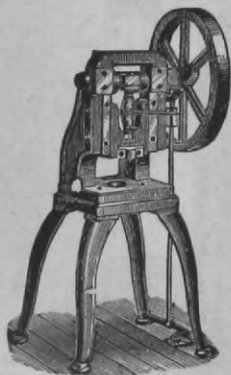
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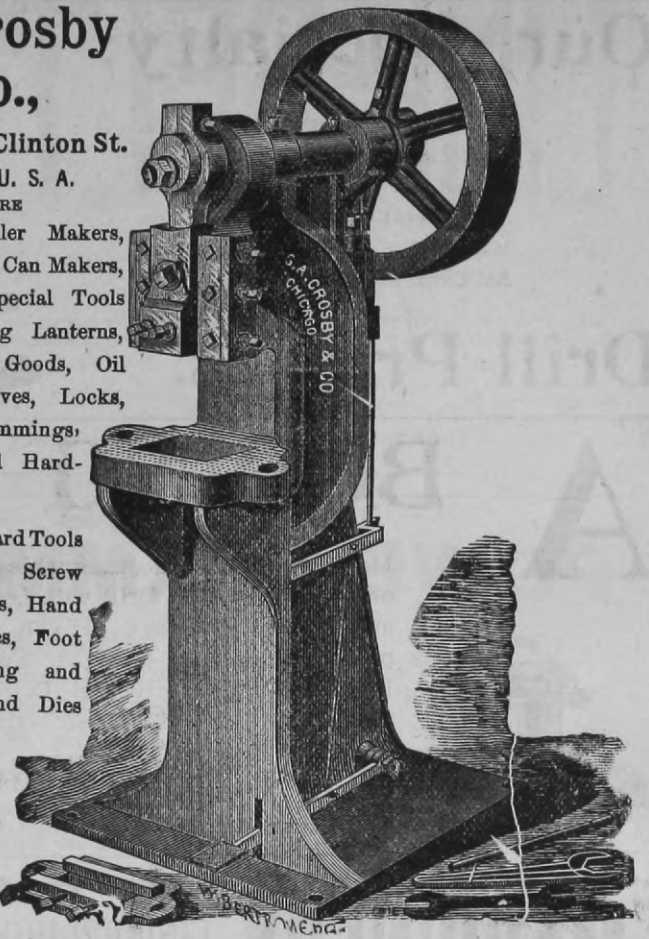
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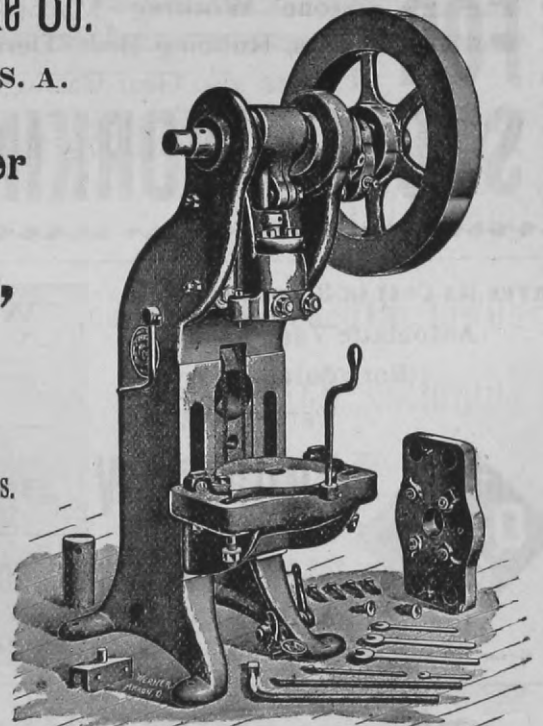
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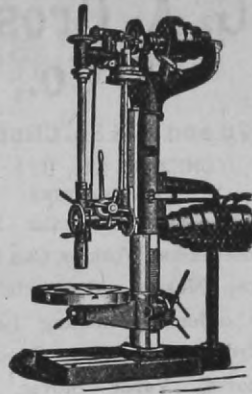
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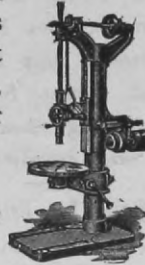
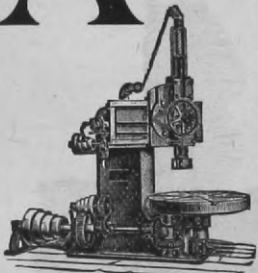
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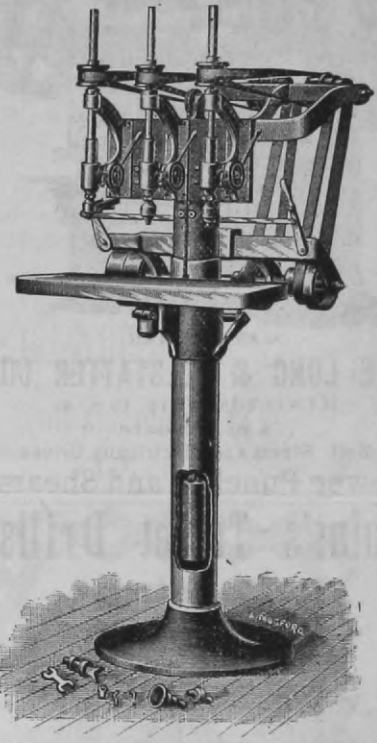
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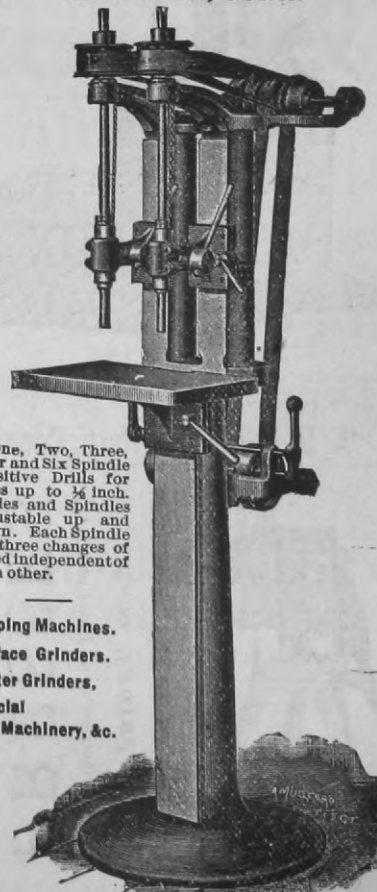


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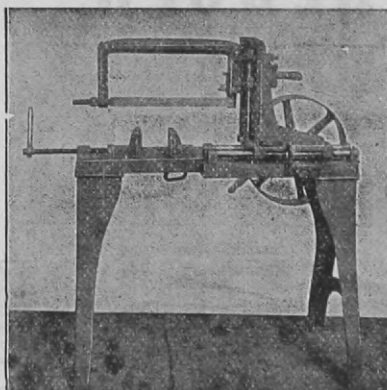
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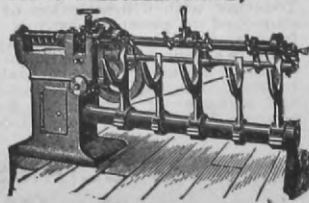
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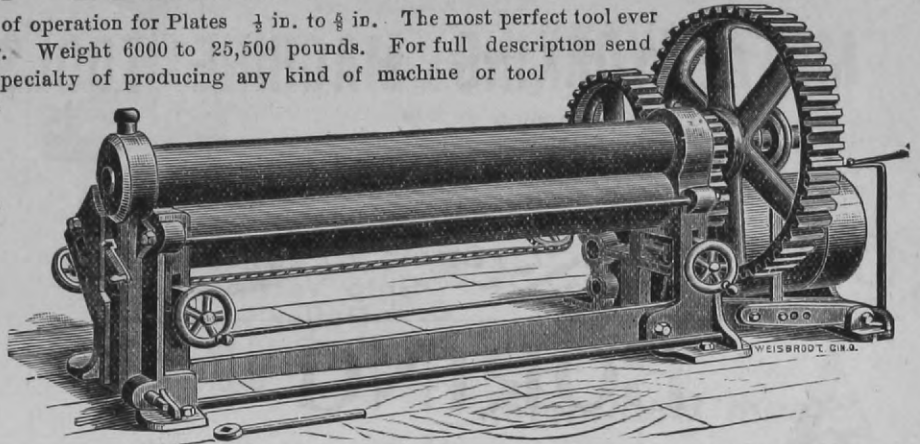
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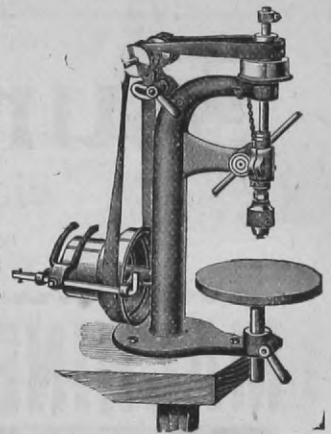
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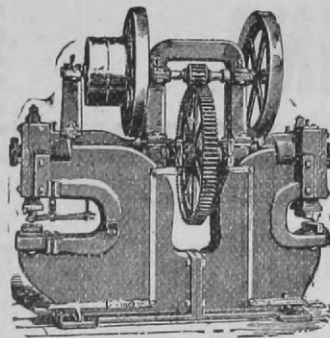
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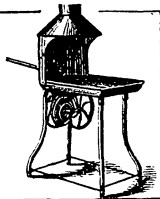
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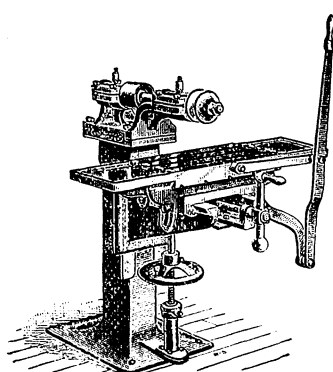
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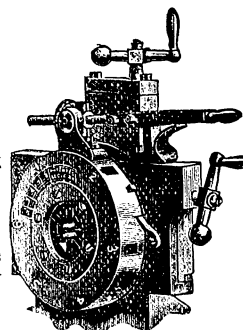
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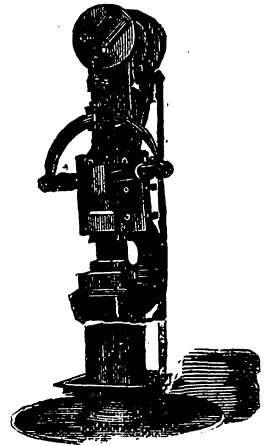
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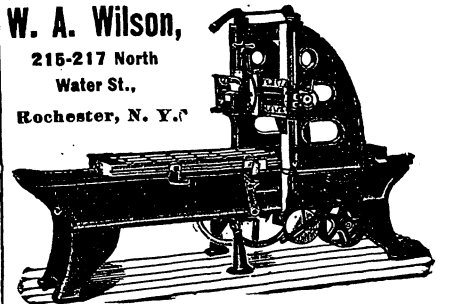
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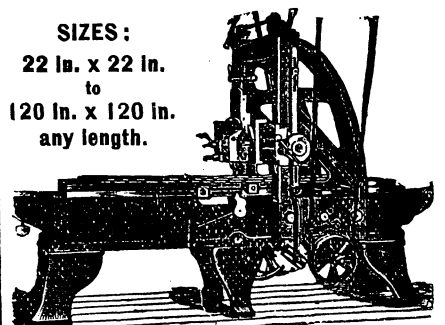
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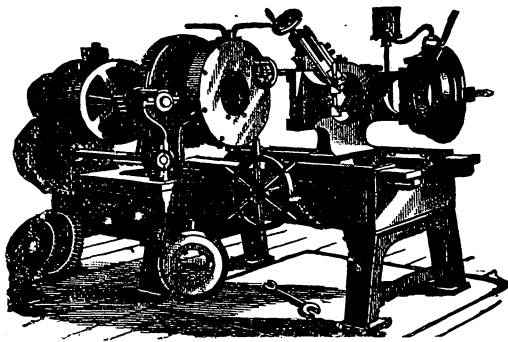
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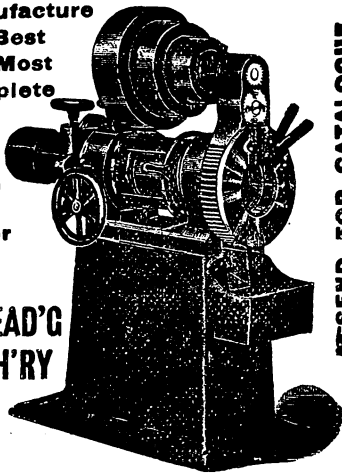
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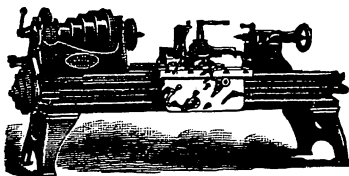
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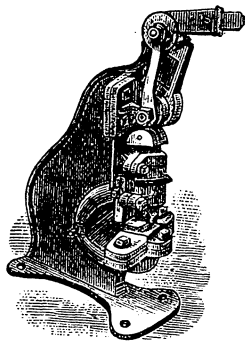


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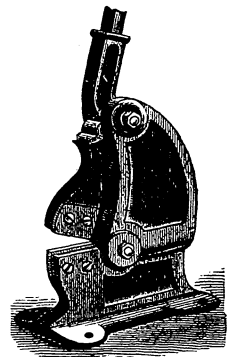
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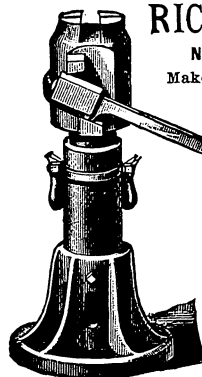
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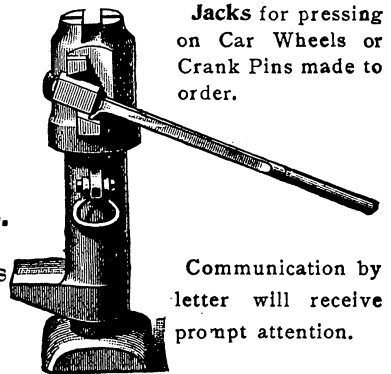
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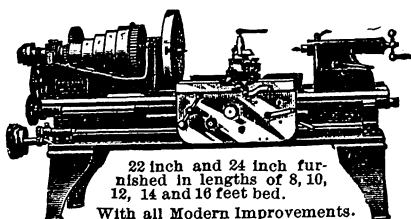
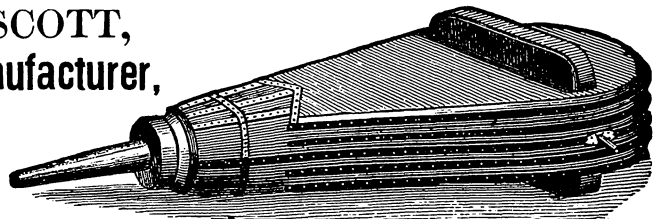
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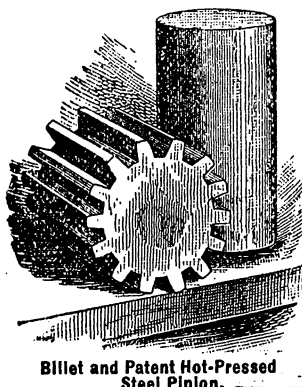
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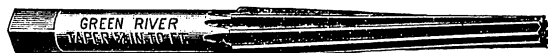
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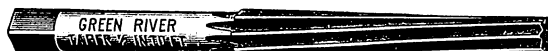
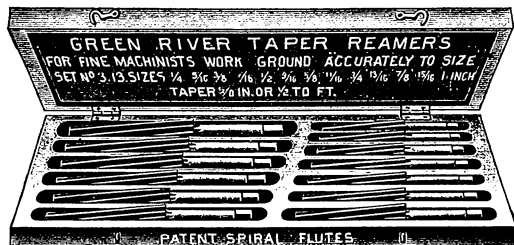
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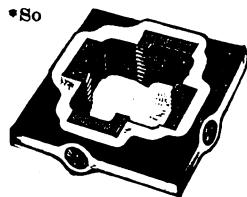
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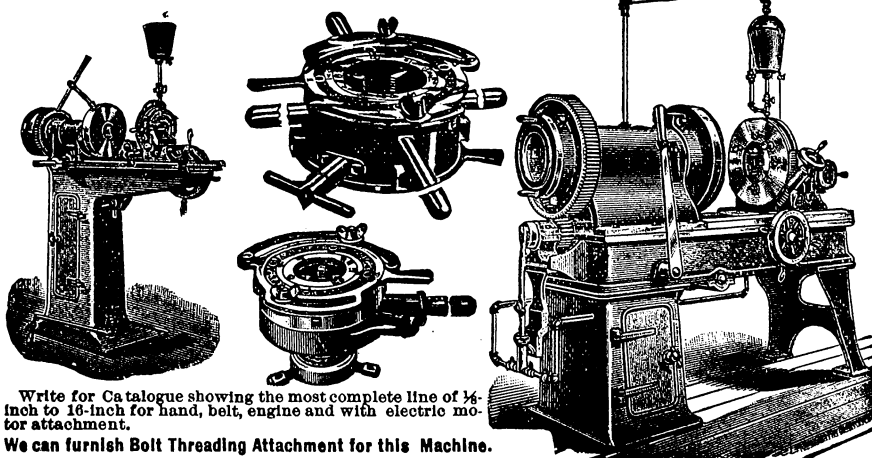
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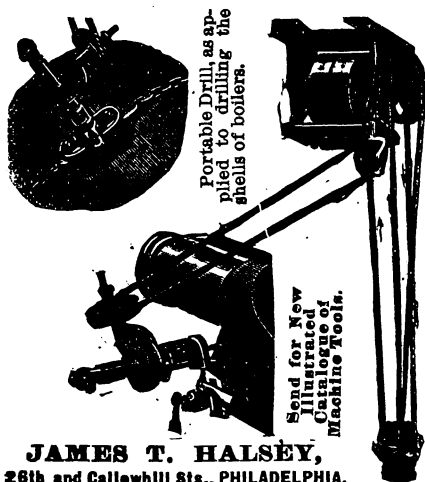
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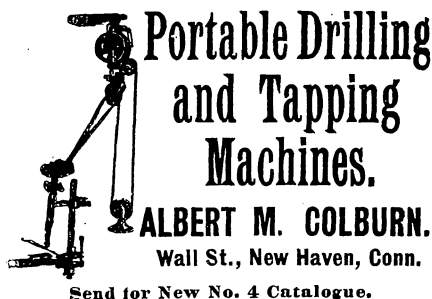
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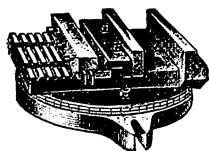


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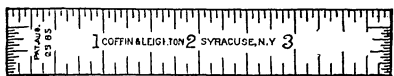
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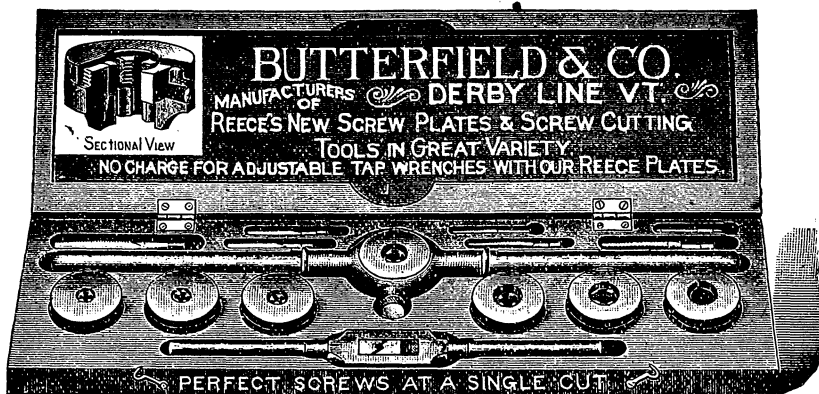
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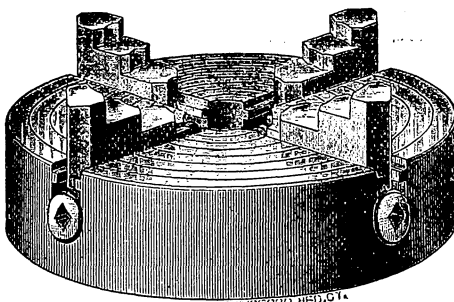
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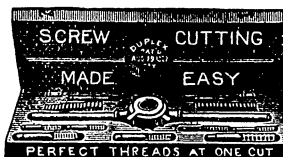


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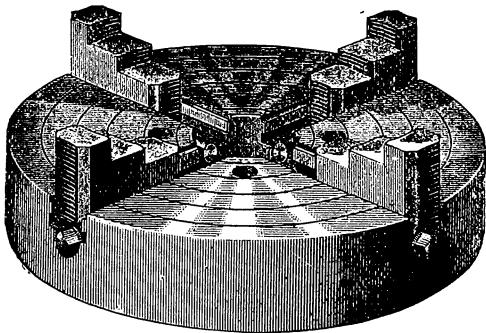
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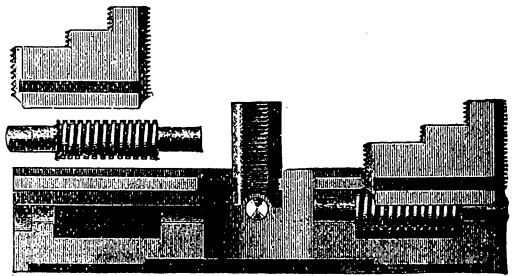
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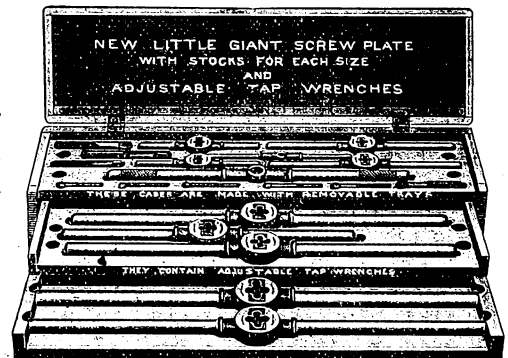
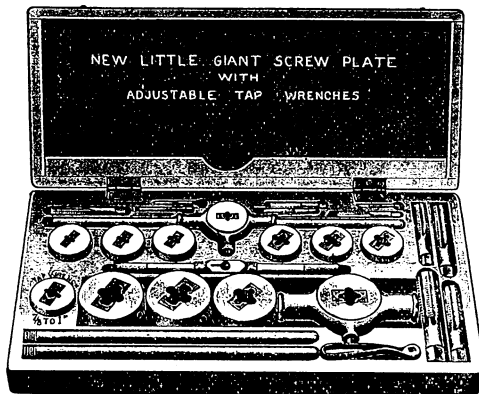
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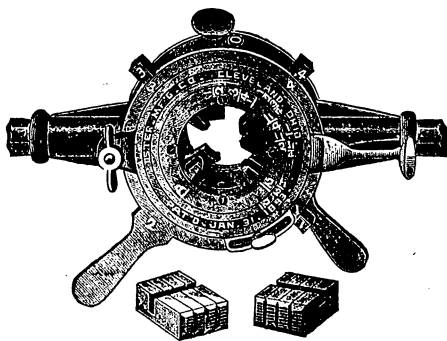
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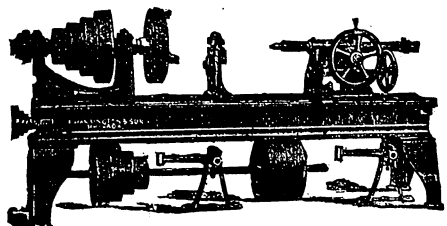
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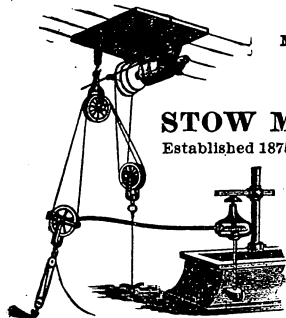
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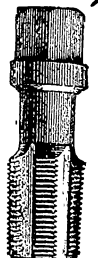
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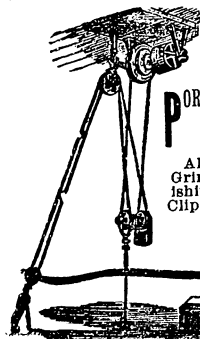
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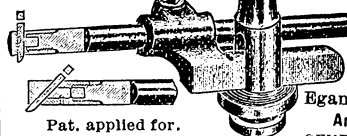
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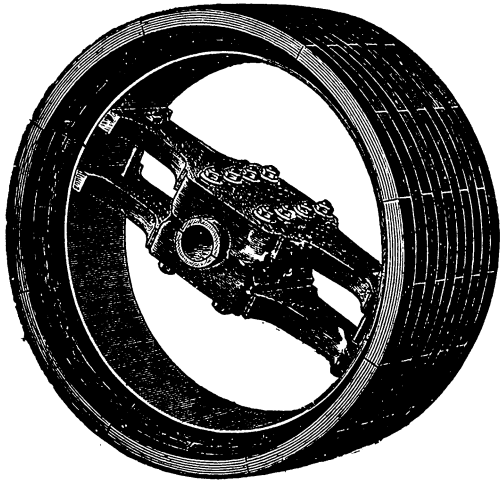
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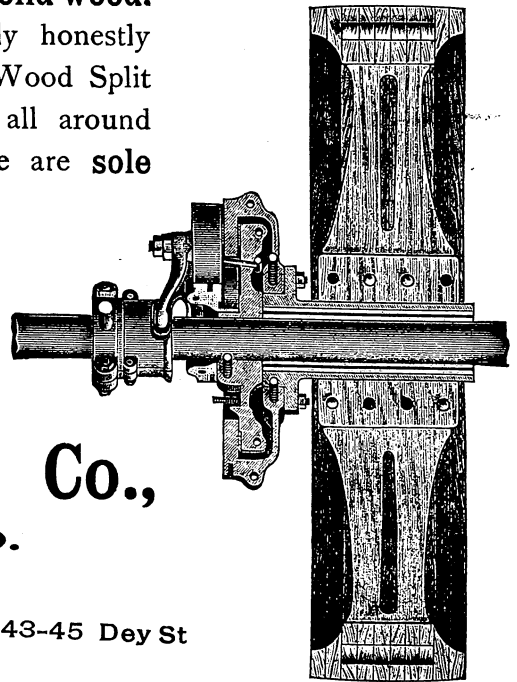
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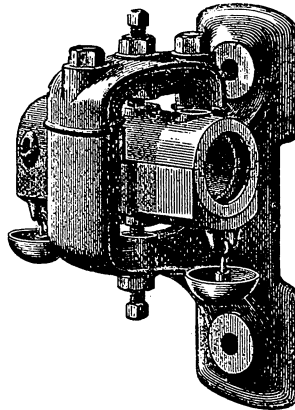
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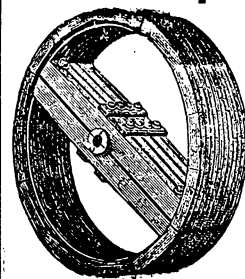
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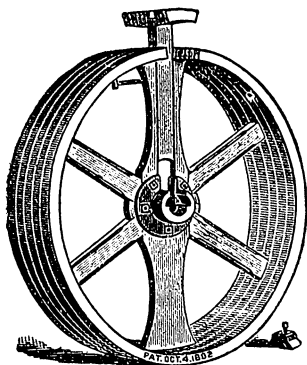
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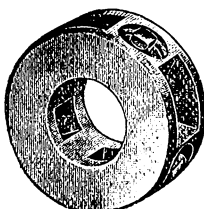
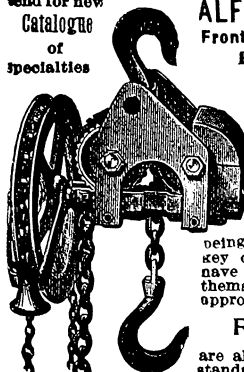
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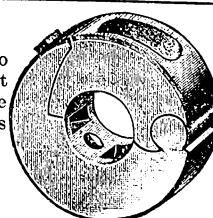
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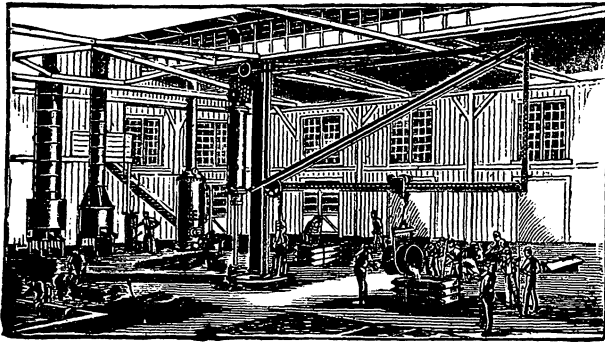
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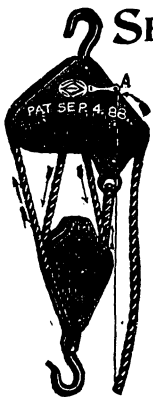
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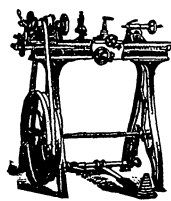
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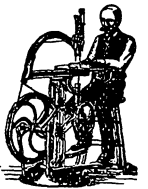
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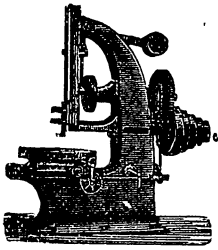
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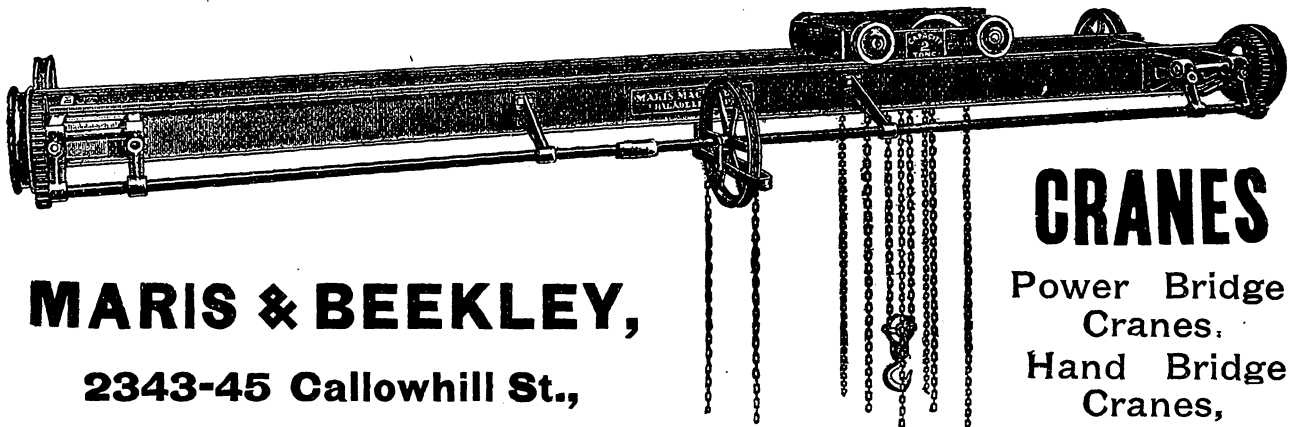
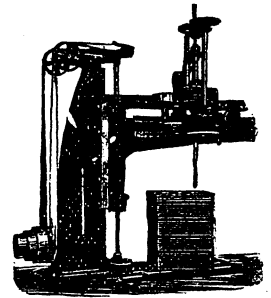


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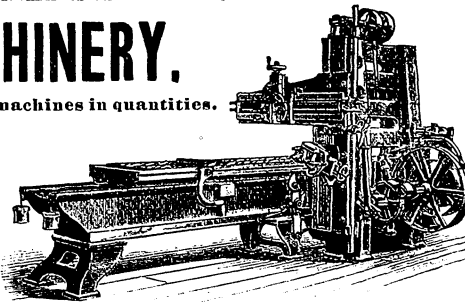
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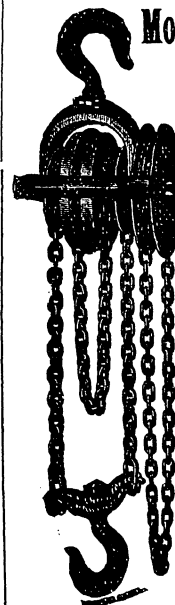
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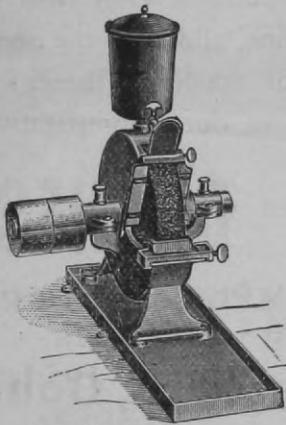
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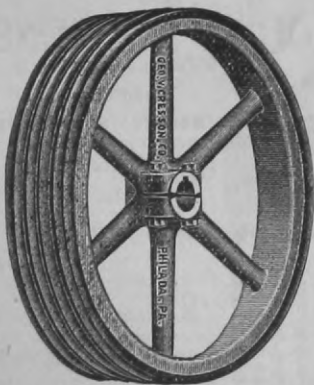
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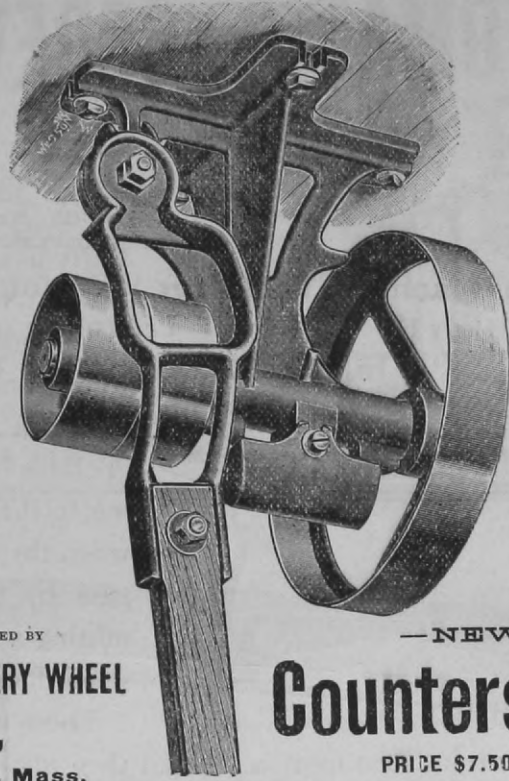
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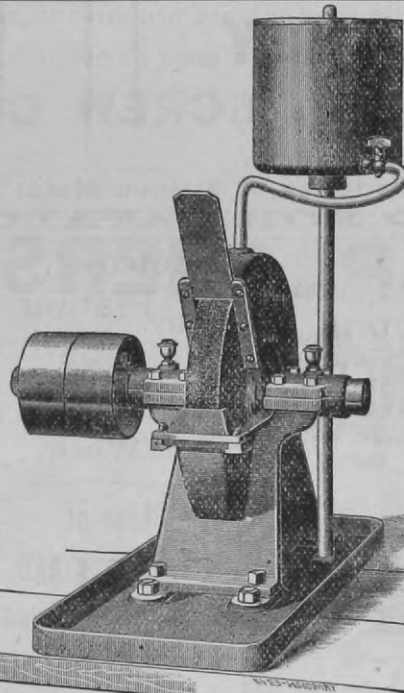
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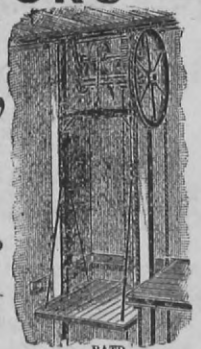
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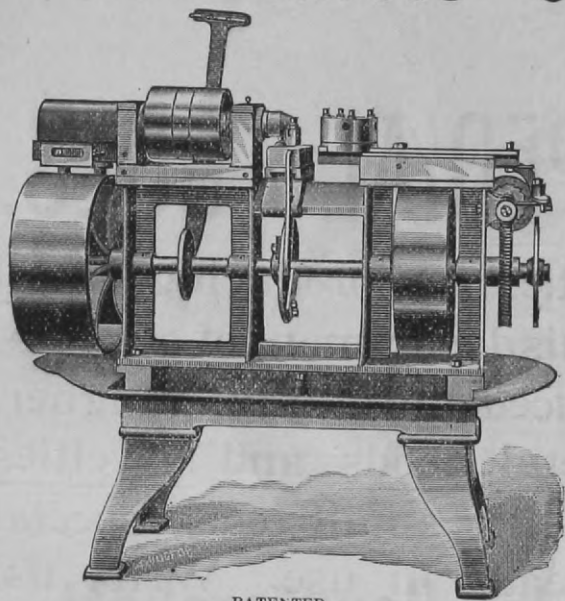
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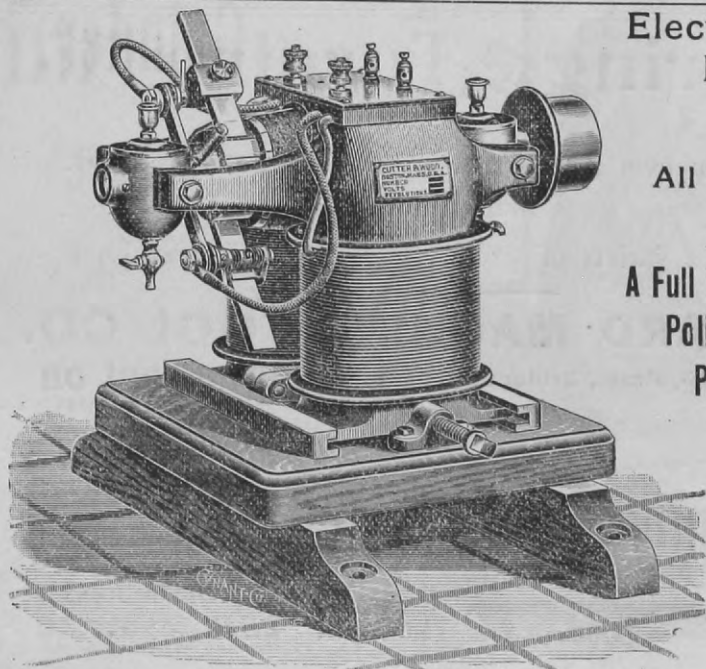
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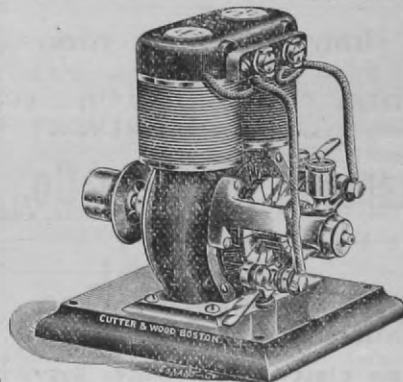
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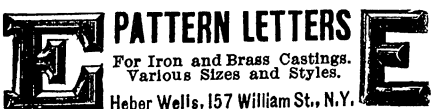


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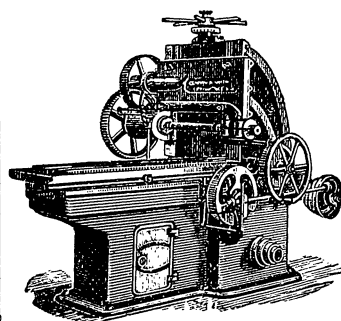
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Rolling Mill Engines.

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- 32 x 48 Vertical, 23 ton wheel.
- 38 x 80 " 20 " "
- 30 x 30 " 20 " "

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 1 16 in. x 16 in. x 3 ft. Crank Planer.
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 1 24 in. x 24 in. x 6 ft. Pease Planer.
 1 27 in. x 27 in. x 5 ft. White Planer.
 1 60 in. x 60 in. x 22 ft. Heavy Planer with 4 heads.
 1 60 in. x 60 in. x 22 ft. Hepworth, 1 head.
 1 8 ft. Boring and Turning Mill with pulley attachment.
DRILL PRESSES.
 2 20 in. Drill Presses, Prentice & Davis.
 1 20 in. x 36 in. Gap Lathe.
 3 Slate Drills, 1 one-spindle, 2 two-spindle.
 2 Pratt & Whitney 1 and 2 spindle.
 6 bench Drills.
 1 50 in. Heavy Geared Post Drill.
 1 each No. 2, 3 and 4 Garvin Gang Drills.
SHAPERS.
 15 in. Stroke, Smith.
 15 in. G. & E. Make.
 17 in. and 24 in. Chase & Hendy.
SPEED LATHES.
 10 in., 12 in. and 14 in. Swing, 3, 4 and 5 ft. Beds, Garvin and Spencer.

ALSO LARGE STOCK NEW TOOLS.

THE NILES TOOL WORKS CO.
 Eastern Branch, 136, 138 Liberty St., N. Y. City.

RAILS FOR SALE.

NEW AND SECOND-HAND
 Relaying rails for all sections. Second-hand Cut Rails for Railroads' Use. Also a small second-hand Engine and Boiler for sale.

J. H. RICHARDSON & CO.,
 Pittsburgh, Pa.

For Sale, Very Low for Cash.

1000 tons relaying 60-lb. Steel T Rails, 500 tons relaying Steel Street Rails, side bearing, 35 to 47 lbs. sections. Also 3 tanks 7½ ft. diameter, 10 ft. high.

WM. H. PERRY & CO., Providence, R. I.

FOR SALE.

One steel screw 25 ft. long, 12 in. diameter, 2 in. pitch, double square thread, with bronze nut 36 in. long fitted to a sliding head, sliding on planed ways. The screw has on one end a long thrust bearing or collar solid on shaft. This is fitted into brass boxes with a thrust block. On extreme end is a heavy gear wheel. There is also a pair of large pulleys with friction clutches for driving the same, also for reversing the motion.

This rig was built for cold drawing large shafting or tubing. The whole outfit will be sold cheap, as we have no further use for it. It is first-class in every particular. Address

THE PAIGE TUBE COMPANY,
 Warren, O.

ROLLING MILL FOR SALE OR LEASE.

Located in Chicago, within easy teaming distance of city warehouses and large consumers. Railroad facilities, first-class, connecting with every road entering the city. Well equipped, having one 10 in. and one 18 in. three-high train and an 18 in. muck train. Capacity, 75 tons a day. Mill can easily be adapted to specialties. Owners will take part pay in product. Address

CHICAGO FORGE & BOLT CO.,
 20th St. and Stewart Ave., Chicago.

SECOND-HAND.

One Brainard Standard Universal Milling Machine, No. 1.
 One Brown & Sharpe Universal Milling Machine, No. 4.
 One Pond Gear Cutter to cut 36 in. dia., 5 in. face.
 One Hackney Power Hammer, 100 lbs.
 One Lodge, Davis & Co. Engine Lathe, 18 in. swing, 6 ft. bed.
 One Fifield Engine Lathe, 30 in. swing, 12 ft bed, with risers to swing 38 in.
 One Putnam Planer to plane 30 in. wide, 27 in. high, 6½ ft. long.
 One Traverse Drill.

HILL, CLARKE & CO.,

156 Oliver St., Boston, Mass.

12 and 14 South Canal St., Chicago, Ill.

For Sale.**ALMOST NEW.**

6 ft. Pond Boring Machine.
 No. 1 Betts Horizontal Boring Machine.
 48 in. x 48 in. x 12 ft. Sellers Planer.
 36 in. x 9 ft. Harrington Engine Lathe.

PHILADELPHIA MACHINERY & SUPPLY CO., 19 N. 7th St., Philadelphia.

FOR SALE.**RIDGWAY BALANCED STEAM HYDRAULIC CRANE.**

Length of arm 14 ft. 11 in.; height in the clear, 14 ft. 4 in.; cylinder 12 in. diameter, capacity 1 ton and less. Cost \$400. Never been used, as it was too light for our requirements. Will sell at very low figure. Address

NEW HAVEN WIRE MFG. CO.,
 New Haven, Conn.

TO LET FOR MANUFACTURING USES.

At South Easton, Pa., on line of Lehigh Valley Railroad and on Lehigh Canal. Sidings in buildings. Electric light. Electric street railway. One main 2-story building, 275 ft. x 45 ft. Steam Engine, Shafting and complete appurtenances for first-class factory or machine shop. One high 1-story building, 80 ft. x 45 ft. Cement floor. One 2-story building, 35 ft. x 45 ft. ground floor suitable for smith shop, etc. These buildings were erected for galvanizing and barb wire plant, and more recently, for several years, have been in the occupancy of The National Switch & Signal Co. They form part of the plant of The Stewart Wire Co., being separated from its main plant by the Lehigh Canal. Affords a most desirable opportunity for industry using wire in any of its forms and is an exceptionally fine location for manufactory of any character.

Will be let in whole or in part, with or without the adjacent thoroughly equipped and complete Wire Drawing Mill, steam and water power, situated on same side of Canal. For further particulars address

THE STEWART WIRE CO.,
 Easton, Pa.

EXECUTOR'S PUBLIC SALE OF A**Valuable Furnace Property**

KNOWN AS THE

"COLERAINE IRON CO.,"

Located at REDINGTON, PENNA.

WILL BE SOLD AT PUBLIC SALE,

At the Phila. Exchange, 3d and Walnut Sts., Phila.,
 On TUESDAY, Oct. 16th, at 12 o'clock,

The Furnace Plant known as the "Coleraine Iron Co.," situated at Redington, on the Lehigh Valley R. R., midway between Bethlehem and Easton. The Real Estate covers about 70 acres, on which are erected 2 Blast Furnaces, 4 Cooper Stoves, 44 pipes each (Boilers over Engine), 4 Nests, 3 Cylinder Boilers, 2 Double Plunger Pumps, Steam Hammer, large Stock-house and Stock-yard to each Furnace, large Car and Carpenter Shop, Blacksmith Shop, Stone Stable, Machine Shop, Pattern Shop and Foundry (with full line of Machines and Tools), Store Building and Office, Foreman's House, Manager's House, Superintendent's House, 20 Dwellings for Workmen, Stone Quarry. 25 Acres Farming Land, Cinder Dumpage, Railroad Tracks, Scales, etc., etc.

By order of the

FIDELITY INSURANCE TRUST AND SAFE DEPOSIT CO., Executors, Philadelphia.

BARNES & LOFLAND, Auctioneers,
 No. 147 So. Fourth St., Philadelphia.

WANTED.

To buy for cash, first-class second-hand Engine Lathes, Planers, Drill Presses, Shapers, Milling Machines, Etc.,
 Address

THE FOSDICK & PLUCKER MACHINE TOOL CO.,
 Cincinnati, Ohio.

PITTSBURGH**SALES AGENCY,**

J. H. HILLMAN, Manager,

No. 8 Wood St.,
Pittsburgh, Pa.,

Offers for sale at very low prices **BESSEMER STEEL WORKS; STRUCTURAL STEEL MILLS, also STEEL MILL FOR ROLLING BARS AND COLD ROLLING, 2 BLAST FURNACES, RUSTLESS IRON WORKS, GLASS WORKS, FOUNDRY, PLANING MILL, BRICK WORKS, and numerous other manufacturing interests and large quantity of very desirable Coal Properties improved and unimproved.**

Dealers in Coal and Iron Lands.**Examination and Reports**

on Properties.

References on Application.

FOR SALE. Tipton Furnace.

The undersigned Executor offers at private sale the valuable blast furnace property known as the "Tipton Furnace," situated half way between Reading, Pa., and Allentown, Pa., on the line of the Philadelphia & Reading R.R. Co's East Penn branch. A modern furnace in every particular, seventy feet high, three "Gordon" brick hot blast stoves.

Large 7 ft. x 7 ft. 6 in. "Weimer" Engine of latest design. Largest size "Crane" Elevator and complete equipment in general. Was in active operation until May 1st last, and controlling one of the best foundry and mill trades in the country. Sold to close the estate of the late Henry S. Eckert of Reading, Pa. For particulars address

ISAAC ECKERT,
 Executor,
 Reading, Pa.

FOR SALE.

A new iron building for immediate shipment, 81 ft. wide, 200 ft. long, consisting of a main span 61 ft. wide, with lean-to on one side 20 ft. wide. The trusses are sufficiently strong to carry a line of shafting and light jib crane. This building is suitable for a Machine Shop, Tin Plate Mill, Rolling Mill, etc. For further information address

SHIFFLER BRIDGE CO.,
 Pittsburg, Pa.

WANTED.

A manufacturer wants to add to his line some new specialties that will sell to the Jobbing Hardware, Saddlery or Woodware Trade. Address "JOB-BING TRADE," office of *The Iron Age*, 96-102 Reade Street New York.

IRON PLANER.

36 in. wide, 36 in. high, 12 ft. long.
New Haven make. With all the Automatic Feeds. Good order. Taken in trade and will be sold very low before removal.

J. J. McCabe,

14 Dey Street, - New York.

FOR SALE.

At one-half actual cost and in use about one year. Steam Plant and Motive Power for an Electrical Plant, consisting of two Tandem Compound Dick and Church Engines, 125 H. P. each and built extra heavy for street railroad work. Also two 100 H. P. Return Tubular Boilers, with two stacks and all the steam fittings and pump. Condition first-class. This complete plant is offered subject to prior sales at \$1400. For better information address VULCAN IRON COMPANY, Ltd., New Castle, Pa.

WE HAVE FOR SALE

Four Good Iron Tanks, As Follows:

One Tank 8 ft. Diameter by 21 ft. in length.
One Tank 7 ft. diameter by 12 ft. 6 in. in length.
Two Tanks, 30 inches by 50 inches.
Also one Wagon Tank 36 inches diameter by 9 ft. in length. Address

AMERICAN AXE & TOOL CO.,
New York City.

Who is in the market for a lot of 2-inch Four Ply Water Hose?

We have in stock about 1000 feet of best quality $\frac{3}{4}$ in. four ply water hose, which we will sell at 35¢ per foot (price of 2 in.), with couplings, thread to suit regular 2 in. hose coupling, or to fit 2 in. wrought iron pipe. Address

REUTER & MALLORY,
22 Light St., Baltimore, Md.

FOR SALE.

The best Hardware business in the city of Wichita, Kans. Will sell the entire stock, or take a partner for one half interest. Stock about \$10,000. Reason for selling, poor health. Address

"B.,"

301 N. Water St., Wichita, Kans.

LAKEVIEW, WASHINGTON.

A model manufacturing location. Special inducements offered to manufacturers. Unexcelled facilities for coal and lumber and shipment by rail and water. Eighty ton Iron and Steel Rolling Mill (only one in the State) now being built. Address

THE SOUTH TACOMA COMPANY,
P. O. Box 207, Tacoma, Washington.

FOR SALE.

The oldest and best established retail Hardware business in Southern Pennsylvania. Located in a town of 5000 inhabitants, where are also located several of the best established manufacturing plants in the State. The town is situated in a good agricultural as well as largest fruit growing district in the State. Stock consists of a general line of Builders' Hardware, House Furnishing Goods, Shelf Goods, Paints, Oils, Glass, Agricultural Implements, etc. Will inventory about \$12,000. Best location, largest room, clean stock and a reasonable rent. Best of reasons for selling. Address "CLEAN STOCK," office of *The Iron Age*, 96-102 Reade St., New York.

FOR SALE.

A good Hardware and House Furnishing store in a town of 20,000 inhabitants. Within 30 miles of New York. A good clean stock. Owner has good reasons for selling. Will sell at a sacrifice. Address "C.," Box 104, office of *The Iron Age*, 96-102 Reade St., N. Y.

A Rare Business Chance.

For sale, in a live, wide awake Western city, a Hardware, Agricultural Implement, Stove, Tinware and Plumbing business having a good retail and jobbing trade, that extends over a very large territory. Stock will now invoice about \$80,000 but can be reduced. Best of reasons for selling. Full information and references furnished to those meaning business. Location the best in the United States for any one suffering from pulmonary troubles. Address

FRANK MARION, care Maxwell House,
Nashville, Tenn.

FOR SALE.—To close an estate, on account of death of principal. An old and well established jobbing and retail Hardware business, located in one of the largest manufacturing cities in the State of California. The best location in the State outside of San Francisco for a jobbing business. Stock is well assorted and consists of shelf and builders' hardware, mechanics' tools, bar and sheet iron, etc. Will inventory about \$40,000. Terms and statements to principals only. Address "A. B. C.," Box 104, office of *The Iron Age*, 96-102 Reade St., N. Y.

WANTED,

to buy machinery for making V-Crimp, Corrugated and other kinds Iron Roofing. State price and condition. "CASH," office of *The Iron Age*, 96-102 Reade St., New York.

FOR SALE.

The entire plant of the Muncie Nail Co., embracing buildings and machinery, containing 19 puddling furnaces, about two acres of ground, with 40 additional lots in the Gallier addition to the city of Muncie. Natural Gas supply sufficient to operate the plant, good fire protection, shipping facilities the very best. Adjoins corporation of city of Muncie, population 25,000. Big 4, L. E. & W. and Ft. W., C. & L. R.Rs. Property appraised at \$33,913.50; must sell at not less than two thirds of the above sum. Terms of sale, one third cash, balance in four equal payments in six, twelve, eighteen and twenty four months with 6% interest. Personal security and mortgage on property. The above property will be sold to the highest and best bidder October 16th, 1894 between the hours of 10 A. M. and 4 P. M. at the Court House door in the City of Muncie, Indiana.

A. L. JOHNSON, Receiver.

WANTED.

Agency for the sale of Connellsville and Mountain Cokes. Address

"COKE AGENCY," P. O. Box 1086,
Philadelphia, Pa.

FOR SALE.

A good profitable Hardware, Implement and Harness business in a small but growing town in Iowa. Will sell all together or separate, to suit purchaser. Will also sell stock and rent buildings if preferred. Address

ENABNIT & MANZ,
Meservey, Iowa.

Chicago Storage Warehouse.

General merchandise storage, with desk room if wanted, situate in wholesale district. Apply to

C. P. SHERWOOD,
294-300 Franklin Street,
Chicago, Ill.

FOR SALE,

in one of the best agricultural and fruit growing sections of California, a general stock of Hardware, Agricultural Implements, Stoves, Tinware, &c. Stock will now invoice about \$30,000, but can be reduced. Best of reasons for selling. Inquire of

W. W. MONTAGUE & CO., or DUNHAM,
CARRIGAN & HAYDEN CO., San Francisco, Cal.

FOR SALE.

COUNTY or STATE RIGHTS for a very superior cheap portable steel or iron CULVERT BRIDGE. It is adapted to all small streams, runs, etc. It is just the thing to improve ROADS AND HIGHWAYS. It can be placed below or on the level with the road. It also makes a most excellent RAILROAD CULVERT, GUTTER CROSING AND CITY or TOWN CULVERT. Apply to

W. A. NICHOLS,
Girard Building, Philadelphia, Pa.

EXECUTOR'S SALE

of Hardware, Plumbing and Metal Working business to close estate of late James G. Burt. Business established twenty years. Stock and fixtures \$20,000 to \$25,000. A rare opportunity for investment in paying business in "Sunny California." Address

D. A. MOULTON, Executor,
San Bernardino, Cal.

WANTED.

By a large manufacturing establishment some new specialty to make and sell to the Jobbing Hardware, Crockery or Grocery trade. Address

"NEW SPECIALTIES,"

office of *The Iron Age*, 96-102 Reade Street, New York.

A BARGAIN.

A fine business opportunity for a live business man or two partners who have \$25,000 to invest in a first-class, old, well established and well located jobbing and retail Hardware business, which did not lose money last year. Stock is well assorted. Good location in large Eastern City. Reasonable lease of premises can be continued. This will bear full investigation. Parties who can command above amount of capital address

"BARGAIN," Box 315,
office of *The Iron Age*, 96-102 Reade St., N. Y.

IMPORTANT AUCTION NOTICE.

E. Bissell, Son & Co.,

AUCTIONEERS,

Thursday, and Friday, October 11 and 12, at 10 o'clock,

At Nos. 12 Murray St. and 15 Park Place, N. Y.,

Large, Special and Unreserved Trade Sale

—OF—

Table and Pocket Cutlery, Carvers,

Plated Flat Ware, Scissors, Shears, Etc., Etc.

This sale will include large and attractive invoices of Cutlery, direct from Manufacturers and Importers, suitable for the Jobbing and Retail Trade, and will include in part

Several Thousand Dozen

of Table Knives and Forks and Knives only, desirable patterns; also Celluloid, Rubber, Bone and Pearl Handle Medium and Dessert Knives; also a large assortment of Carvers and Butcher Knives.

—ALSO—

1000 Dozen of Rogers and other makes of Triple Plated Medium and Dessert Knives, Wm. Rogers Mfg. Co. First Quality Tea and Table Spoons on 18 per cent. Nickel Silver; also Plated Steel Forks and Spoons, 2000 Dozen Pocket Knives, Razors, and fine Cast Steel Nickel Plated Scissors and Shears, all sizes, with brass bolt and nut. Also on

Thursday, October 11, about 2000 Dozen Union File Co.'s first quality Files.

The above goods will be sold without reserve and will be worthy the attention of the trade.

Locations for Factories.

The name of the Chicago, Milwaukee & St. Paul Railway has long been identified with practical measures for the general upbuilding of its territory and the promotion of its commerce, hence manufacturers have an assurance that they will find themselves at home on the company's lines.

The Chicago, Milwaukee & St. Paul Railway Company owns and operates 6,150 miles (9,900 kilometers) of railway, exclusive of second track, connecting track or sidings. The eight States traversed by the company, Illinois, Wisconsin, Northern Michigan, Iowa, Missouri, Minnesota, South Dakota and North Dakota, possess, in addition to the advantages of raw material and proximity to markets, that which is the prime factor in the industrial success of a territory—a people who form one live and thriving community of business men, in whose midst it is save and profitable to settle. Many towns on the line are prepared to treat very favorably with manufacturers who would locate in their vicinity.

Mines of coal, iron, copper, lead and zinc, forests of soft and hard wood, quarries, clays of all kinds, tan-bark, flax and other raw materials exist in its territory in addition to the vast agricultural resources.

A number of new factories have been induced to locate—largely through the instrumentality of this company—at towns on its lines. The central position of the States traversed by the Chicago, Milwaukee & St. Paul Railway makes it possible to command all the markets of the United States. The trend of manufacturing is Westward. Nothing should delay enterprising manufacturers from investigating. Confidential inquiries are treated as such. The information furnished a particular industry is reliable. Address

LUIS JACKSON,

Industrial Commissioner, C., M. & St. P. R'y,
425 Old Colony Building, CHICAGO, ILL.

10 FT. POWER SHEAR

for 1-4 in. iron and lighter

For sale, at very low price. The machine is new and of best construction. Address

NIAGARA STAMPING & TOOL CO.,
Buffalo, N. Y.

BRASS MOLDER.

with first-class reference, capable of taking charge of foundry, wants a position, or would like to buy established foundry with trade for reasonable price. Address "C. E.," 18 Mechanic St., New Haven, Conn.

HELP WANTED.

Undisplayed Advertisements for Help Wanted not exceeding fifty words One Dollar each insertion. Additional words two cents each.

HARDWARE SALESMEN to sell Chain Pumps as a side line on commission; no samples. Address D. F. TANNER, Holland, N. Y.

TRAVELING SALESMAN to sell a leading but limited line of locks to jobbers throughout the United States and Canada; Must be truthful and temperate, of good manners and address and posted on competing goods; must have some experience on the road and be willing to travel the greater part of the year. Address until October 20th, stating references, age, experience and salary desired, "HUSTLER," No. 104, office of *The Iron Age*, 96-102 Reade St., New York.

A SALESMAN to visit the hardware trade in the smaller cities; a live enterprising hustler, who has ideas, and his work to be as much advertising as selling; his trips will keep him out from three to six months at a time; must be temperate, truthful and a man of good appearance. Address, with references and full particulars, "P. M. C.," No. 927, office of *The Iron Age*, 96-102 Reade St., N. Y.

A MAN competent to make spikes by hand machine. Address "SPIKES," P. O. Box 1086, Philadelphia.

A MAN to do enameling; one who thoroughly understands mixing, lining and firing. Address "ENAMEL," office of *The Iron Age*, 312 The Cuyahoga, Cleveland, O.

A MAN AS FOREMAN or assistant superintendent in a bolt works; must be able to handle men well, look after every detail and push all the time and at everything; none but a competent and experienced man need apply; to the right man a steady place is assured with chance for advancement; please state age, habits, references and compensation desired. Address "PUSH," No. 816, office of *The Iron Age*, 96-102 Reade St., N. Y.

WANTED.—Agents in New York, Pennsylvania, Ohio, Indiana and Michigan to carry a staple line of Hardware on commission. Address "EDWARDS," office of *The Iron Age*, 312 Cuyahoga Building, Cleveland, O.

SITUATIONS WANTED.

Undisplayed Advertisements for Situations Wanted not exceeding fifty words Fifty Cents each insertion. Additional words one cent each.

TO MANUFACTURERS OF HARDWARE SPECIALTIES.—A successful traveling salesman desires to represent two or three responsible manufacturers on the road; am thoroughly familiar with the Western field and the buyers, having worked it with satisfaction to both manufacturer and buyer for the past six years; terms salary or salary and commission; satisfaction guaranteed. Address "SALESMAN," 303 E. & B. Building, Rochester, N. Y.

A MANAGER of Chicago branch of Eastern manufacturing company; have had large experience in machinery, manufacturing and sales department; can give test of references. Address "MANAGER," office of *The Iron Age*, 59 Dearborn St., Chicago.

SEAMLESS BRASS AND COPPER TUBE MILL FOREMAN. with 20 years' experience in mill having a capacity to turn out 20 tons of brass and copper tubes per week, also 20 tons of brass and copper rods; latest and most approved methods. Address "TUBE MILL," office of *The Iron Age*, 96-102 Reade St., N. Y.

BY A YOUNG MAN (age 19), a position in hardware store as clerk; two years' experience; references furnished as to character and ability. Address C. E. VANLANDINGHAM, Box 2, Campbell, Texas.

BY A THOROUGH HARDWAREMAN and **TRAVELING SALESMAN**, twenty years' experience in all branches of general and builders' hardware, cutlery, guns, etc., with special attention to builders' hardware and cutlery, position with jobbers manufacturers or manufacturers' agents. Address "EXPERIENCE," office of *The Iron Age*, 96-102 Reade St., N. Y.

A HARDWARE SALESMAN of ability with experience conducting business; desires position as manager of a retail business or agent for manufacturer; would accept a position on the road; eight years' practical experience in builders' hardware and contractors' supplies; first-class references. Address "PENNA," office of *The Iron Age*, 96-102 Reade St., New York.

A LIVE ROAD SALESMAN is open for engagement; is well acquainted with trades using pipe, tubes, valves and chandeliers, through Middle and Southern States. Address "ROAD SALESMAN," office of *The Iron Age*, 96-102 Reade St., N. Y.

A FOREIGN TRAVELER or resident agent, by experienced business man (hardware, etc.) or would represent one or more concerns in New Orleans, where he had 14 years' experience; English, German and French. "E. V.," care P. H. Petry & Co., 16 So. William St., N. Y.

BY A YOUNG MAN with six years' experience in the wholesale and retail hardware business. to travel for some glass manufacturing company or dealer; not afraid of work; can give very best of references; willing to start on a small salary. Address "A. M.," No. 104, office of *The Iron Age*, 96-102 Reade Street, New York.

A YOUNG MAN, age 38, married, one child, having eighteen years' experience in the hardware business, desires a position where intelligent labor combined with strict attention to business will be recognized and rewarded; will furnish references. Address "SIMPLEX," office of *The Iron Age*, 96-102 Reade St., New York.

A MERICAN, 30, tact, energy, intelligence and business capacity, open for engagement; capable of promoting and holding architects' and builders' trade; good salary wanted; willing to earn same. "W. P. M.," 620 Cable Building, Broadway, New York.

EXPERIENCED HARDWARE AND CUTLERY MAN desires a situation as salesman or house position; has had seven years' road experience and can furnish excellent references. Address "EXPERIENCE," P. O. Box 182, Baltimore, Md.

A MAN of large experience as seller and buyer in the iron and steel trade, acquainted throughout Pennsylvania, Maryland, Delaware, New Jersey, New York and New England, is open for an engagement; well versed in pig iron, iron ores, scrap and railroad supplies; thorough correspondent, accountant and business manager. Address "SELLER AND BUYER," office of *The Iron Age*, 96-102 Reade St., New York.

A MAN of large experience in the hardware and cutlery business will be at liberty Sept. 1st to make an engagement with a view to permanency; is well acquainted with Western trade and can in good times influence a large volume of it, or would accept an engagement east of Chicago in any good field, representing general trade or specialties; references first-class in every particular. Address "WESTERN TRADE," office of *The Iron Age*, 96-102 Reade St., N. Y.

A YOUNG MAN of five years' experience in a hardware store would like to secure an interest in a first-class established business; hardware preferred. Address "HARDWARE," office of *The Iron Age*, 220 So. 4th St., Philadelphia, Pa.

BOOKKEEPER.—A middle aged married man who has had many years' experience as bookkeeper, special accountant, keeping cost sheets, etc. in machine shop, boiler shop, foundry and wire mill work, desires position; thoroughly understands business in all details; good references. Address "CLERICAL," office of *The Iron Age*, 96-102 Reade St., N. Y.

A N EXPERIENCED, PRACTICAL rolling mill manager and first-class business man wants a position; thoroughly understands how to make merchant iron and steel at lowest figures and is well posted in buying and manipulating scrap. Address "A. W. B.," office of *The Iron Age*, 96-102 Reade St., N. Y.

ROLLING MILL.—Position wanted by superintendent; twenty years' experience in Northern mills. Address "NORTHERN MILLS," office of *The Iron Age*, 96-102 Reade St., N. Y.

A YOUNG MAN (age 19) desires a position under a competent engineer in New York City or in New Jersey, to learn mechanical drawing; has had some school training in that branch; salary not an object. Address "DRAWING," No. 614, office of *The Iron Age*, 96-102 Reade Street, New York.

A GENTLEMAN of experience and ability wants a position as superintendent of an iron or steel rolling mill; best references and testimonials as to character and capabilities. Address "ROLLING MILL," office of *The Iron Age*, 59 Dearborn St., Chicago.

A N ACTIVE AND ENERGETIC YOUNG MAN, with wide experience as secretary and correspondent of corporations operating blast furnaces, Bessemer steel works, rolling and nail mills, desires a position with a manufacturing company where integrity, capacity and energy are required; best of references. Address "BESSEMER," office of *The Iron Age*, 96-102 Reade St., New York.

A S BOOKKEEPER and **CORRESPONDENT, CASHIER** or **TRAVELING SALESMAN.**—Married man, age 34, wants responsible position; ten years' experience in office, six years traveling through the United States, Canada and Great Britain; acquainted with stove and hardware trades, also tin, brass and copper sheet metal manufacturing; fully competent to take entire charge of a manufacturer's office, or that of large wholesale or retail dealer; locality no object, will settle anywhere; seven years' present position; all references; moderate salary. Wm. A. LANGFORD, Lawrence, Mass.

GRADUATE MECHANICAL ENGINEER and draftsman, junior member American Society Mechanical Engineers, is open to engagement; experience in rolling mill, mining and general machinery; references. Address "W. T. L.," No. 920, office of *The Iron Age*, 96-102 Reade St., New York.

ROLLING MILL SUPERINTENDENT desires position; thoroughly practical; will invest a small amount of money as a guarantee if desired; best of references. Address "K. M. S.," office of *The Iron Age*, 96-102 Reade St., N. Y.

A ROLLER with 20 years' experience in guide and rod mills is open for an engagement; can roll copper, iron and steel; is honest and sober and can furnish good recommendations. Address "GUIDE AND ROD," No. 913, office of *The Iron Age*, 96-102 Reade St., New York.

SPECIAL OFFER.

On account of changes in the sizes of our Screw Machines, we have decided to close out all our present stock of late model machines at a price 10 per cent. better than our regular discounts.

We have for IMMEDIATE DELIVERY:

- | | |
|--|--|
| 1 No. 3 Screw Machine, with Geared Friction Head and Power Feed. | |
| 1 No. 3 " " " " " " " " " " Wire Feed. | |
| 1 No. 3 " " " " " " " " " " Power Feed. | |
| 2 No. 3 " " " " " " " " " " Wire Feed, and extra large Hollow Spindle. | |
| 1 No. 3 screw Machine with Plain Head. | |
| 1 No. 3 Turret Lathe, with Geared Friction Head and Wire Feed. | |
- The following are partly finished, and will be furnished with or without Power Feed, or Wire Feed:
- | | |
|---|--|
| 7 No. 3 Screw Machines, with Geared Friction Head. | |
| 5 No. 3 " " " " " " " " " " Back Geared Head. | |
| 2 No. 3 " " " " " " " " " " and extra large Hollow Spindle. | |

Write for Photograph, Description and Price.

THE GARVIN MACHINE CO.,

LAIGHT and CANAL STS.,
New York.

Also 51 North 7th Street, Philadelphia, Pa.

WE WANT TO SELL
TWO PAIRS

WORTHINGTON COMP. COND. PRESS. PUMPS.

14 in. x 24½ in. x 8½ in. x 18 in.
ADAPTED TO 2000 LBS
W. Nos. 46,957-8.

COMPLETE WITH CONDENSER. USED BUT LITTLE. DISPLACED BY LARGER ONES.

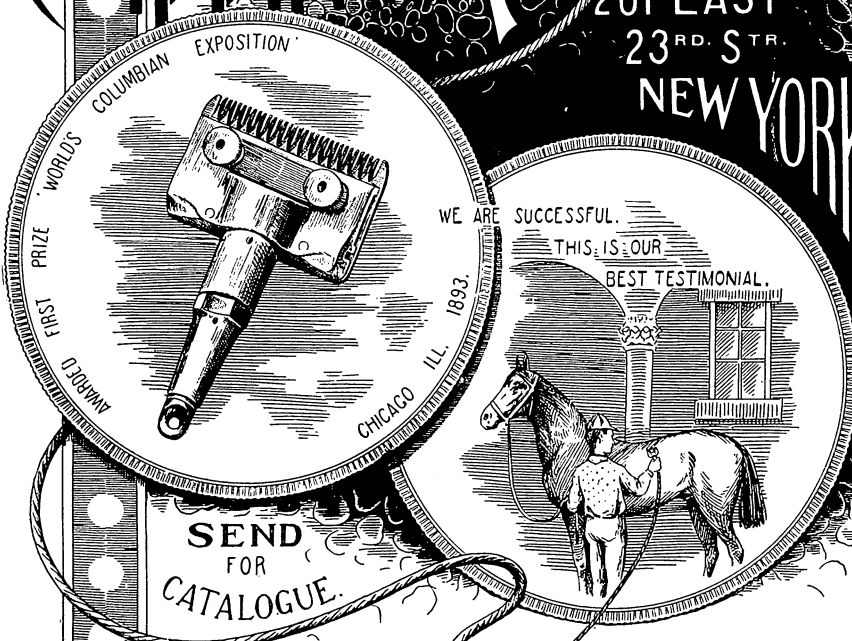
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First Ave. and 53d St., Brooklyn, N. Y.

The Gillette

CLIPPING MACHINE

201 EAST
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AMOLD FIRST PRIZE WORLD COLUMBIAN EXPOSITION CHICAGO ILL. 1893

WE ARE SUCCESSFUL.
THIS IS OUR
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Horse Clipping Machines Operated by
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other powers.

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Solid through trains between Cincinnati, Toledo and Detroit. Pullman Vestibuled Trains between Cincinnati, Indianapolis and Chicago. Through car lines from Cincinnati via Indianapolis to St. Louis; also Cincinnati via Indianapolis to Decatur, Springfield, Ills., and Keokuk. These are the only lines running Pullman Vestibule and Dining Cars between the cities named. See that your ticket reads via Cincinnati, Hamilton and Dayton.

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Dealers in Grocers' Fixtures

who desire to reduce their stock of scales and fixtures and are willing to offer inducements to cash buyers, quote prices and full description to

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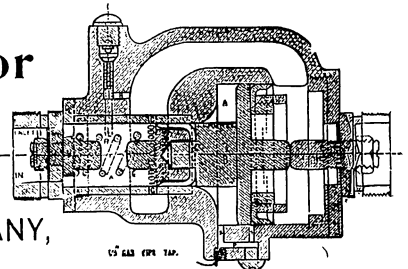
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Pressure Regulator

PATENTED.

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A well located and established plant for the manufacture of all kinds of Builders' Iron and Wire Work, Iron Fences, Stable Fixtures, &c. Good orders on hand. Present owner engaged in other business. This is a rare chance to get a good paying business. Address

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4 and 6 Warren Street, New York.
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Author Coleman's Mechanic's Liens in Illinois
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MECHANIC'S LIENS EXCLUSIVELY

WE BEG TO CALL ATTENTION TO OUR “Structural Tubing”

(On which and on the machinery and process of manufacture there are patents pending in the United States and foreign countries).

This Tubing is not intended to convey liquids, but for construction purposes where rigidity, elasticity strength and lightness are required is equal to machinery rounds, and tests have proven conclusively that it is stiffer, stronger and more serviceable than welded pipe.

It is manufactured in rounds from $\frac{3}{4}$ inch to 4 inches in diameter, and a large assortment of Squares, Channels and Triangles, which can be used to great advantage by manufacturers of

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Fire Escapes,	Blowers,	Wind Mills,
Railway Signals,	Fences,	Hand Railings,
Light Iron Buildings,	Forges,	Brake Beams,
Tops and Masts for Electric Light and Trolley Poles,		
Braces for Car Truck Frames, Bedstead Frames,		
Railway and Steamship Railings, etc.		

We will be glad to name prices and discounts and furnish samples for tests.

NATIONAL STRUCTURAL TUBING CO.,

Potter Building, New York.

SELLING AGENTS:

JUSTICE COX, Jr., 218 South Fourth Street, Philadelphia, Penna.

F. K. BOWES, No. 5 Exchange, Grand Pacific Hotel, Chicago, Ill.

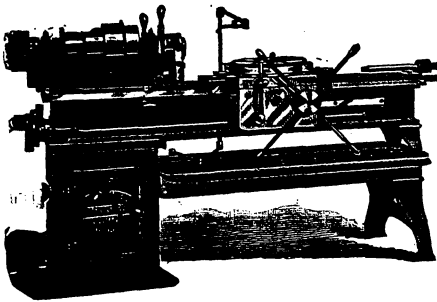
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TO MANUFACTURERS AND OTHERS.—We respectfully ask you not to be hasty in contracting for your season's supply of inferior material on account of misrepresentations of manufacturers thereof, in regard to our Structural Tubing, and our ability to make deliveries

It is far beyond experiment, and is being made daily. Additional size or shape added to list weekly.

We invite thorough investigation.

With no prospect whatever of advance this winter in the price of iron or its products, you will lose nothing by delaying the little time necessary for full examination. Write us.



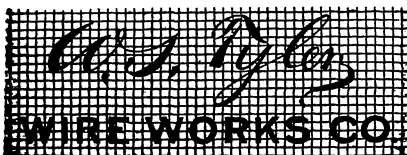
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If not send for

RAPID LATHE WORK.

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Improved Revolving Mining Screens,

For Coal, Ores, Phosphates, Etc.

Also Tipple Screens and Yard Screens. Extra Heavy Double Crimped Mining Cloths, of every description.

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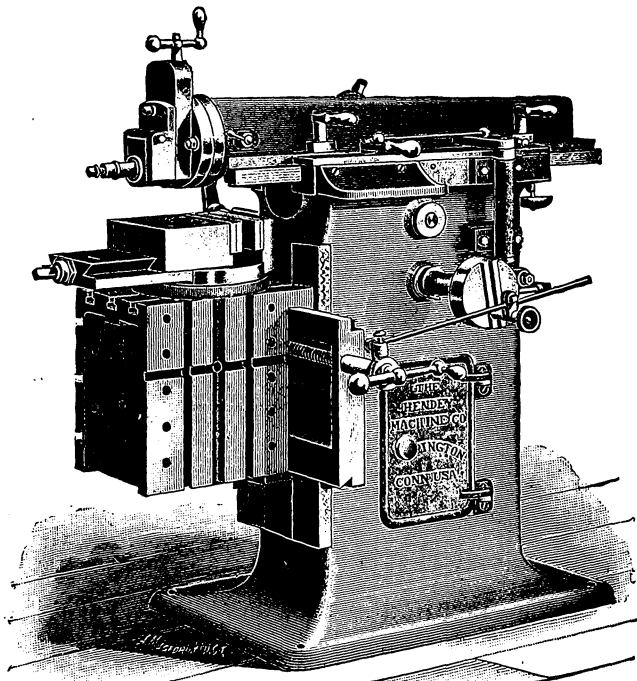
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Pittsburgh Office, 701 Ferguson Block,
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24-inch Improved Hendey Shaper.

COMBINES the LATEST and BEST Improvements.

Useful Attachments, Strong and Powerful. Changes Made Rapidly. Uniform Cutting Speed. For Tool Room use or all around Machine Shop Work.

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It stands at the head. It has no rival.

It represents modern ideas and modern practice in Screw Cutting Engine Lathes.

We challenge a comparison of its conveniences,

Useful attachments and every day merits with ANY lathe made.

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PROFILE or FACE CAM MILLING.

We are prepared to mill **Face Cams** with the utmost accuracy and perfect in finish at very moderate prices.

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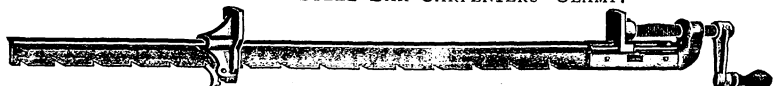
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THE STEARNS STEEL BAR CARPENTERS' CLAMP.



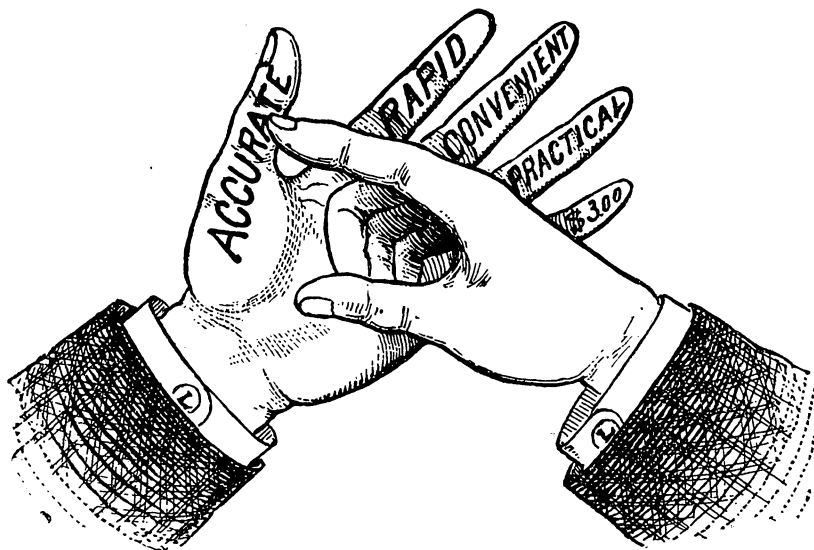
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Lengths, 3, 4, 5, 6, 7, 8, 9, 10 foot.

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For Example, we desire to find the net of \$73.00 at discount 65, 20, 7½, 5 and 2½ per cent. By the old way we take our pencil, and, after a deal of figuring, conclude (if we haven't made an error that the result should be \$17.51, but we are not sure of it till we prove it. By the new way (the use of Ladd's Discount Book), we put our finger right on it in a moment, and know that the result is correct.

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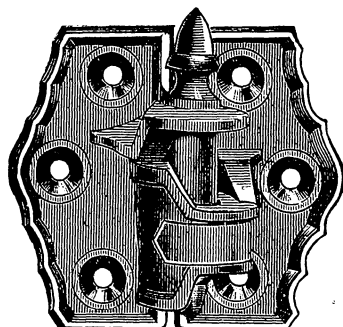
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Heavy Waterproof Tubs. Cans of Charcoal Tin-plated. Malleable Iron Dashers. All inside parts tin-plated. Gearing completely covered.

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THE
BEST
SELLER.

The White Mountain Freezer Co., Nashua, N. H.



"NIAGARA" GRAVITY-LOCKING
BLIND HINGES,

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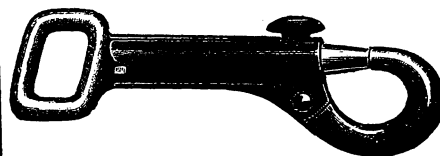
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BANNER BOLT SNAP.

This snap has many important advantages over other makes of Bolt Snaps, viz.: It is lighter, the spring is entirely covered and protected from foreign substances and freezing, and is lower in price.

Made in all sizes: Round, Loop and Open Eye. We are headquarters and the most extensive manufacturers in Saddlery, Coach and General Hardware Specialties.

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COLUMBIAS

Are the representative high grade machines in America. A Columbia is the easiest machine to sell to the best trade because it is unquestionably the standard wheel of the world.

We want enterprising agents of good standing and solicit correspondence.

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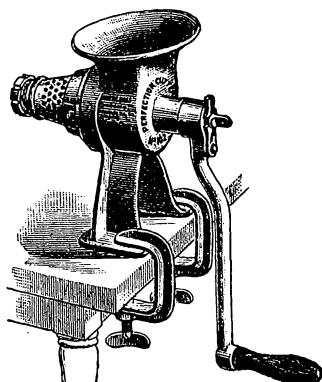
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Simple to use. Easy to clean.
Of few parts.

Requires no repairs.

Easily put together and taken apart.
No parts to wear out or become dull.
Does not mash or grind meats, etc.
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Perfection
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Manufactured by

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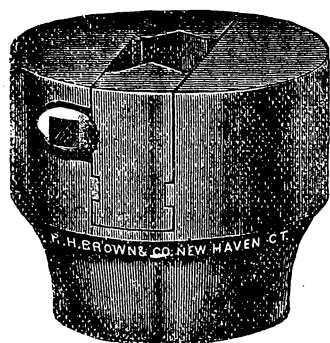
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THREE SIZES.

No. 0 takes any drill from 0 to 1-2 inch inclusive.

No. 1 " " " " 0 " 3-4 " "

No. 2 " " " " 0 " 1 " "



They are the strongest and most durable made. Drill absolutely in the center. No twisting or bending necessary if drill is straight. Can be fitted to hollow spindle lathes for working long rods.

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R. H. BROWN & CO., - New Haven, Conn.

*You take no risk on the quality.
We make only the best!*



**Sand
Papers**

in
Reams and Rolls

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Garnet Paper
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Emery Cloth

HAIR FELTING for covering Boilers, Steam and Water Pipe, and lining Refrigerators.

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87 BECKMAN STREET, NEW YORK.
143 MILK STREET, BOSTON.
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Palmer's Common Sense Frame Pulley.



MANUFACTURED BY

PALMER HARDWARE MFG. CO., Troy, N.Y.

ROLLER JACK SCREW.



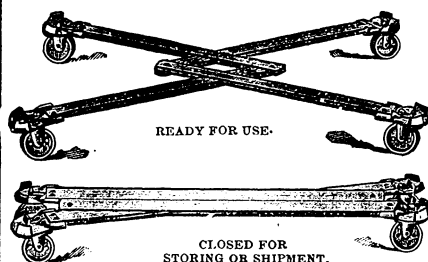
We have experimented much with ball bearing Jacks, and found them very satisfactory when not heavily loaded. Now, instead of balls we put in rollers, as seen in cut. These rollers will stand any load that the Jack will carry, and are not liable to get out of order. We have thoroughly tested these Roller Jacks with a spring balance and find a saving of seventy-five per cent. of power needed to lift a given weight.

The price is about ten per cent. more for Roller Jacks, and the gain is 75 per cent. This ought to insure their sale as fast as the facts become known.

MILLERS FALLS CO.,

93 READE STREET, - - - NEW YORK.

Lock Frame Stove Trucks.

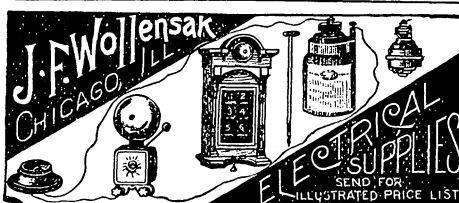


Fit any stove, large or small, without nuts, bolts, screws or yokes. Have the best ball bearing casters. Fully warranted. Price, \$15.00 and \$18.00 per dozen.

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CABINET LOCKS

OF EVERY KIND.

DRAWER LOCKS,

CUPBOARD LOCKS,

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DESK LOCKS.

A complete line of more than 1000 list numbers exclusive of our old and complete line of

YALE CABINET LOCKS.

THE YALE & TOWNE M'F'G CO.,

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The only question is

Is it Le Page's?

If it is you have made a sale. HUNDREDS of THOUSANDS of PLEASED and SATISFIED CUSTOMERS testify to the merits of

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If you sell it you do not have to WASTE ANY TIME in answering questions as to its quality.

The people KNOW that LE PAGE'S GLUE is the BEST. They have used it for years and have proved our claims to be true.

It is the only Glue made WITHOUT ACIDS.

A dealer who regards his time as worth anything will not risk losing his CUSTOMERS' CONFIDENCE by trying to sell something which is CLAIMED to be "just as strong" and "just as good as LePage's."

Don't let your customers go to another store for what they want, but **SELL THEM WHAT THEY ASK FOR.**

We can furnish original and attractive advertising matter for "LE PAGE'S GLUE" upon request.

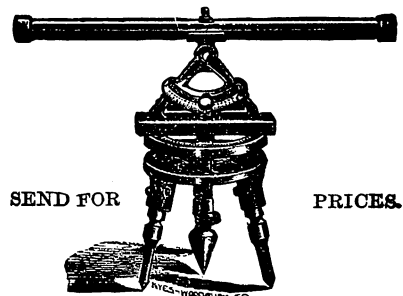
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NEW YORK OFFICE, 95 Reade and 113 Chambers Streets.

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PRICES.

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Manufacturers of Iron Levels
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The Marty French Traps for Rats and Mice.

GREAT REDUCTION IN PRICE.

On account of the lower rate of duties under the new tariff we are now prepared to furnish all sizes at greatly reduced prices, which we shall be glad to quote on application.

Remember we are the **sole importers** of the **genuine Trap**. All others are flimsy and worthless imitations.

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Boston, Mass.



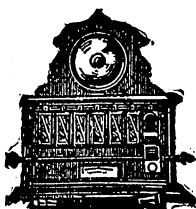
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STEEL STAMPS
For Every Purpose.
Steel Letters and Figures.
Burning Brands, Stencils,
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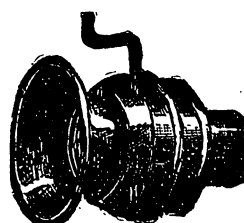


W. R. OSTRANDER & CO.,

204 FULTON STREET, NEW YORK,
Manufacturers of

SPEAKING TUBES, WHISTLES, ORAL, ELECTRIC
MECHANICAL AND PNEUMATIC ANNUNCIATORS
AND BELLS.

Complete outfits of Speaking Tubes, Whistles,
Electric, Mechanical and Pneumatic Bells. A full line
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DeKalb ave. near Knickerbocker, Brooklyn, N. Y.



W. & B. DOUGLAS, MIDDLETOWN, CONN.

Branch Warehouses: 85 and 87 John St., New York; 197 Lake Street, Chicago, Ill.

THE OLDEST AND MOST EXTENSIVE MANUFACTURERS OF

Pumps, Hydraulic Rams, Garden Engines,

Yard Hydrants, Street Washers, Galvanized Pump Chain, Wind Mill Pumps and other Hydraulic Machines in the World.

DOUGLAS' DIAPHRAGM PUMPS, "Loud Patent."

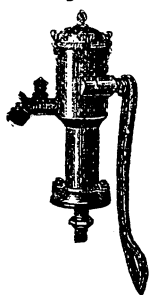
A LARGE CAPACITY AND EASY WORKING PUMP FOR

Water Works, Sewer Contractors, Foundation Builders, Mines, Quarries;

Fig. 200.

Fig. 381.

Fig. 145.



or wherever it is desired to raise a large quantity of water by
hand power.

The pump has large valves (accessible by hand), and will pump water containing sand, gravel, sewage matter, &c., without choking or any perceptible wear.

CAPACITY

from 3,000 to 4,500 gallons per hour.

These pumps are simple, durable and low priced.

Made either as shown in cut for Hose or for **IRON** Pipe Suction underneath.



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THE DEMING
FACTORY
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MANUFACTURERS OF
HAND & POWER PUMPS, WELL SUPPLIES & C. VERTICAL STEAM PUMPING ENGINES.

ARTESIAN WELL CYLINDERS, HYDRAULIC RAMS.

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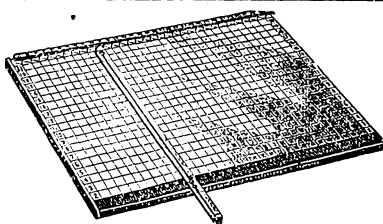
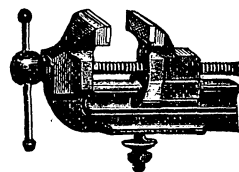
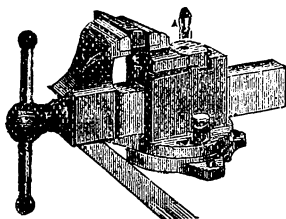
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PRENTISS VISE COMPANY,

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44 Barclay St., New York.



The PERFECTION GLASS BOARD.

The best, most complete, most durable and most convenient Glass Cutting Board in the market. It is indispensable

to any retailer of window glass, and will save its cost in a very short time. Send for descriptive circular and price.

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THE LARGEST PUMP & TOOL WORKS EXCLUSIVELY UNITED STATES

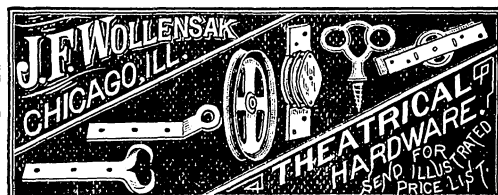
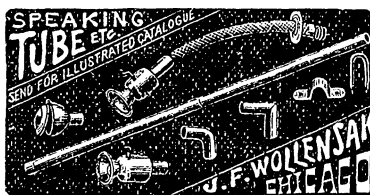
ASHLAND, O.

+ CATALOGUES FREE +

Ashland Pump and Hay Tool Works.

LUFKIN RULE CO., Saginaw, Mich.

New York Office, 2½ Murray Street.



MERK CHRISTMAS TREE HOLDER!

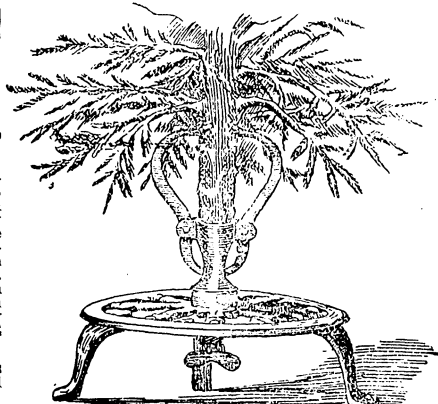
PATENTED SEPT. 1st, 1891.

BUY THE BEST.

Christmas comes but once a year

If you want to make your home pleasant and cheerful during the holidays BUY A MERK CHRISTMAS TREE HOLDER. Made of iron, neatly finished in gold bronze or japanned, a great improvement over any heretofore made. By an ingenious contrivance the tree is held secure by strong arms which extend upward from the main body of the receptacle in which it is placed. If desired the tree can be revolved. Sample tree holders sent by express prepaid upon receipt of \$1. Packed in quarter and half dozen crates for shipment. Manufactured and sold only by the **ALLEN TOWN HARDWARE WORKS, ALLENTOWN, PA.**

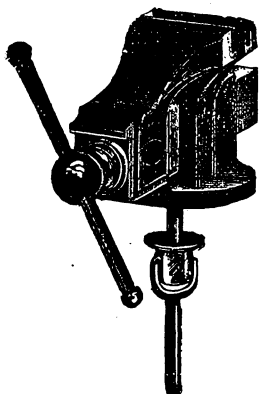
SOMETHING NEW.—Hardware dealers and others are requested to write for descriptive circulars and wholesale prices.



The New York Safety Dumb Waiter.
"The Manhattan Dumb Waiter."
The Improved Humphrey Hand Elevator.
Made specially to be sold by Hardware Stores.
Thousands in use. Catalogues on application.
THE STORM MANUFACTURING CO.
NEWARK, NEW JERSEY.
Formerly of Poughkeepsie, New York.



Athol Machine Co.,
Selling Agents.



**HOLLANDS'
OFFSET JAW
VISE.**

Specially adapted
for drill press work
where chucks can-
not be used and
equally good for
special or regular
bench work.

Hollands Mfg. Co.,
ERIE, P.A.,
Manufacturers all
styles VISES.

**Red Jacket
Mfg Co.**

DAVENPORT
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Manufacture the

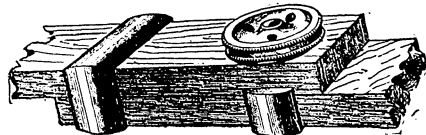
Only Pump

in the U. S.

that works easily in
wells of any depth, and
can easily be fixed by
any one with a monkey
wrench without tak-
ing the pump from
well or tearing up the
platform.

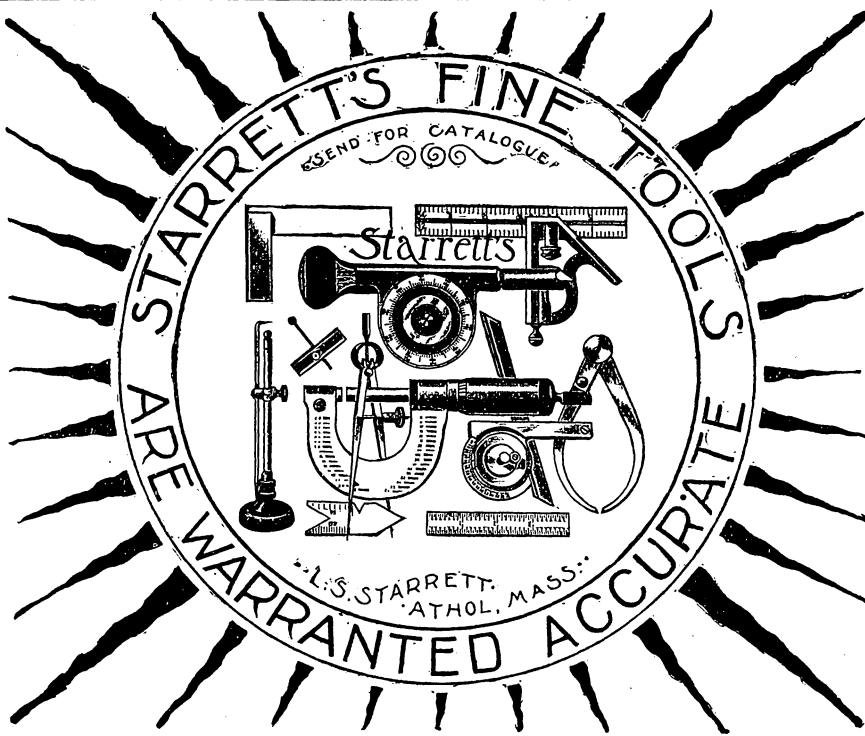
WRITE FOR PRICES.

Chas. Millar & Son,
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Extension Rules and Hardware Specialties
Send for Catalogue.
RANSON HARDWARE CO., Burlington, Vt.

CHAS. W. HOFIC,
ENGRAVER AND DIE SINKER,
52 FULTON ST., - N. Y.
STEEL STAMPS,
BRASS DIES, BURNING BRANDS, &c.
Designs on Steel Finely Executed.

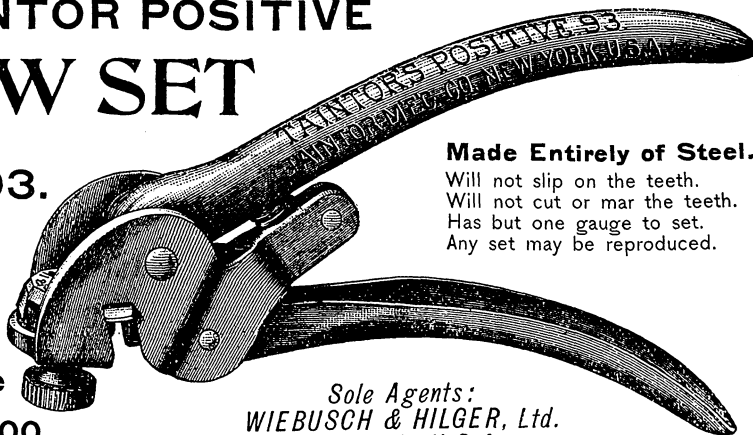


TAINTOR POSITIVE SAW SET

No. 93.

.....
Retail

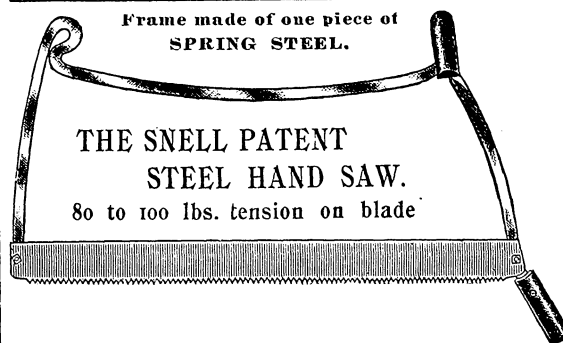
Price
\$1.00.



Made Entirely of Steel.

Will not slip on the teeth.
Will not cut or mar the teeth.
Has but one gauge to set.
Any set may be reproduced.

Sole Agents:
WIEBUSCH & HILGER, Ltd.
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Frame made of one piece of
SPRING STEEL.

**THE SNELL PATENT
STEEL HAND SAW.**

80 to 100 lbs. tension on blade

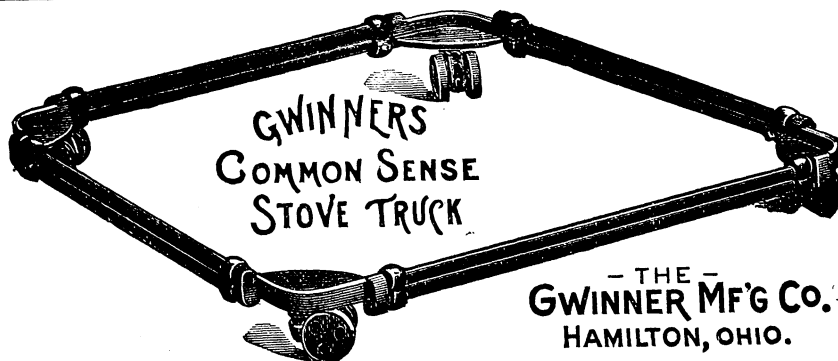
WILL NOT BEND NOR BREAK.

FACTORY, 330 to 338 First Street, So. Boston.

This saw is always
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has to be adjusted after
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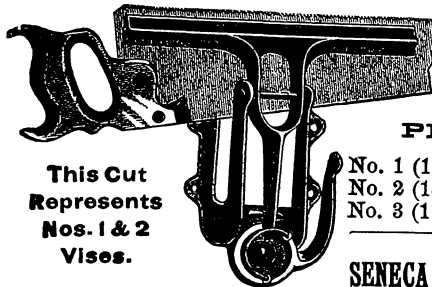
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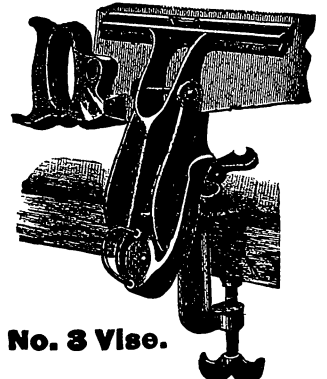
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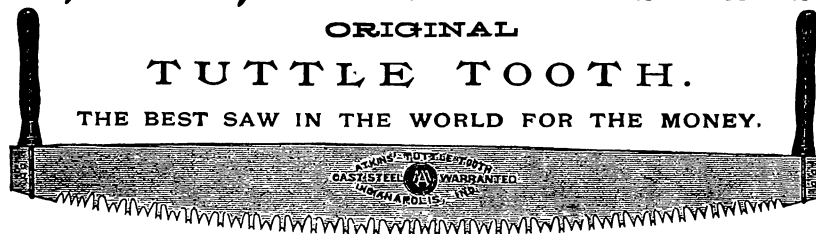
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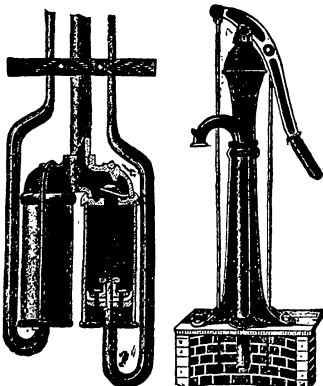
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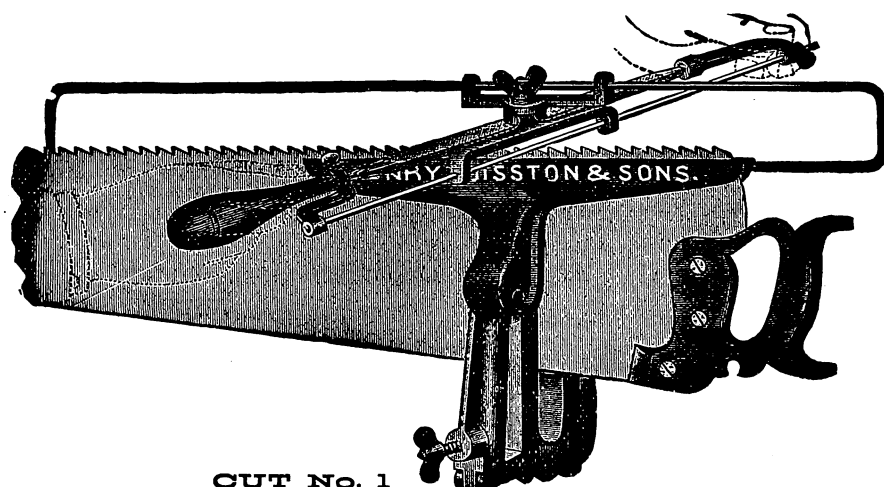
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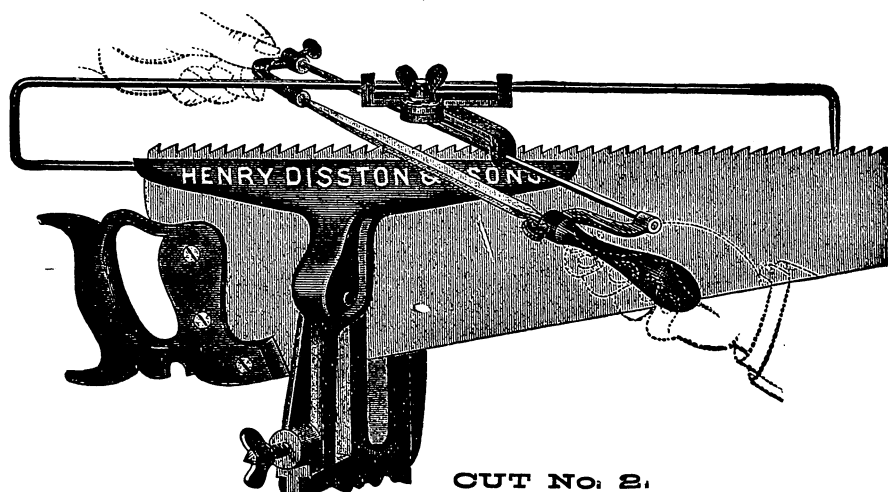
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Cut No. 1 shows a saw and the attachment in proper position for filing the first side, and Cut No. 2 shows the saw and attachment reversed and in position to file the second side. There are three marks on one of the hubs of the swivel attachment, and one mark on the other. One of the three marks shows when it is in position No. 1, and the other designates when it is in position as shown in No. 2. The third, or centre, marks show when it is in position for filing Rip Saws.



CUT No. 2.

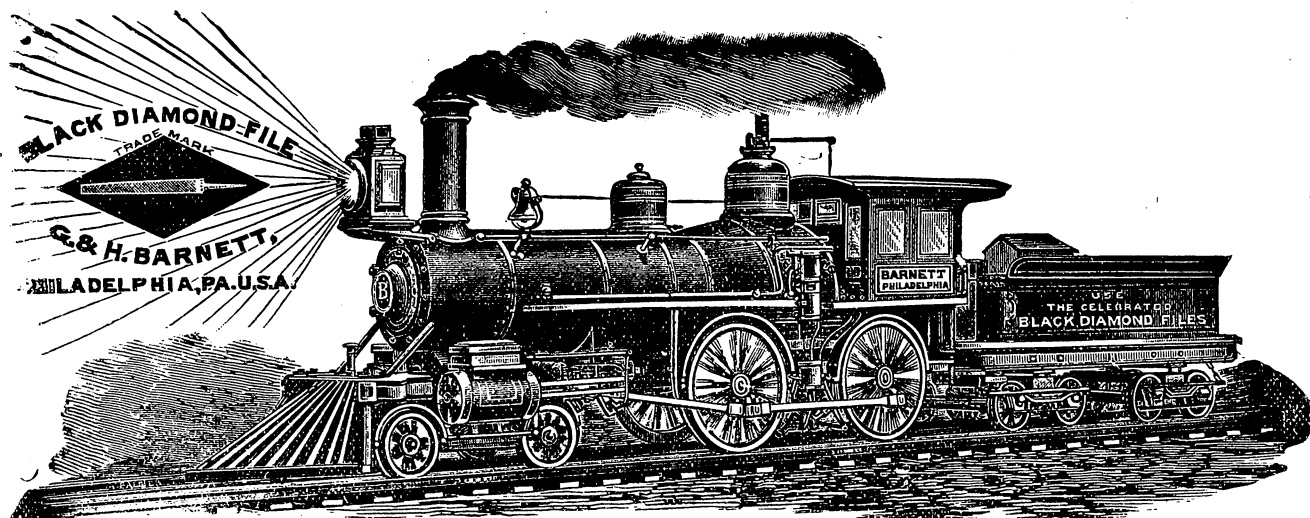
To obtain the correct position, loosen the wing nut and move the guide around to the point desired; after tightening wing nut, loosen screw in file handle, then turn handle until file gives the shape tooth wanted.

A good way is to select a tooth of correct shape and let file down into it, tighten set screw in handle, then file a tooth to see if the shape suits. If not turn the file a little to the right or left and try another tooth until the proper shape is obtained. Then file every other tooth, see cut No. 1; when one side is filed, reverse saw and attachment and adjust as in No. 2, and file the other teeth. For Rip Saws, place the file at right angles with the saw and file every tooth. Always keep the file as nearly horizontal as possible.

This filing guide is sold only attached to our No. 3 Improved Clamp or Vise, and not sold separately. We recommend this as the best saw clamp on the market, being quickly and easily adjusted, and not liable to get out of order.

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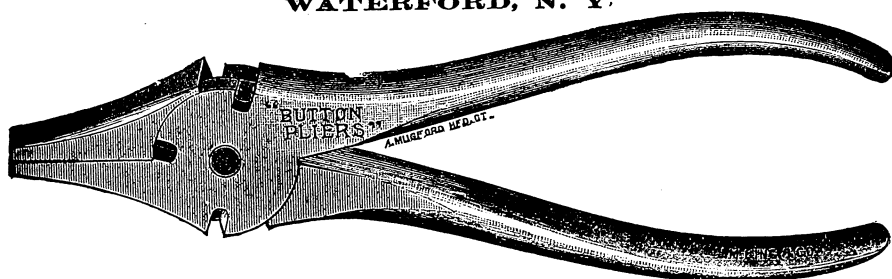
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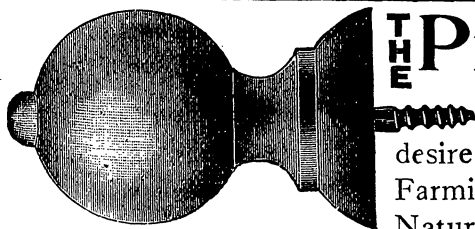
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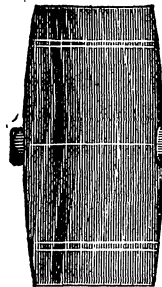
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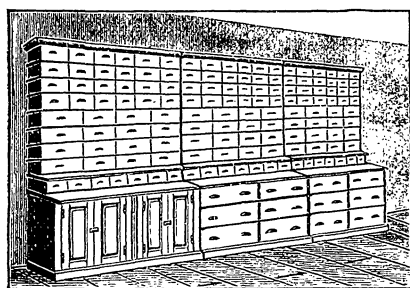
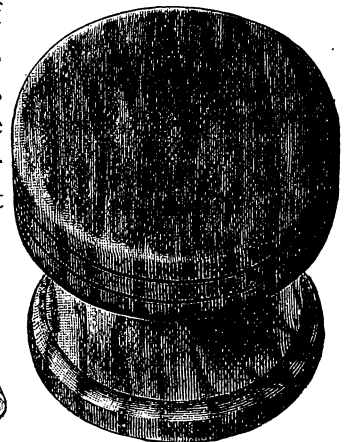
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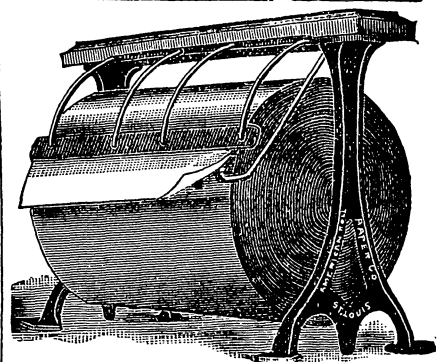
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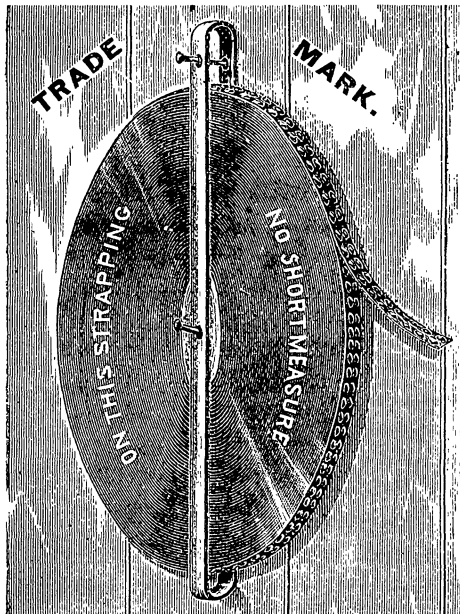
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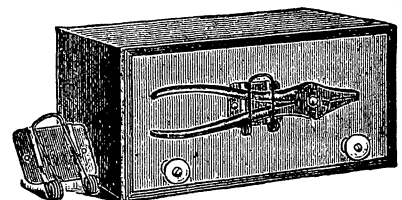
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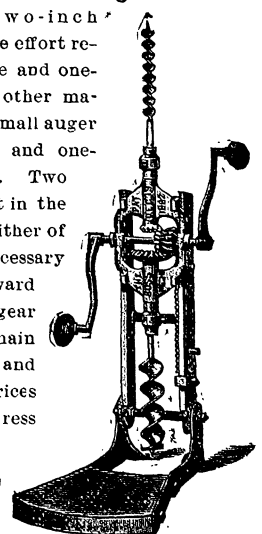
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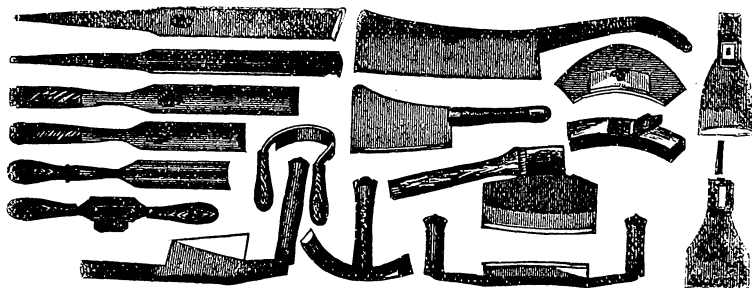
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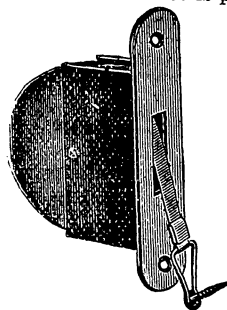
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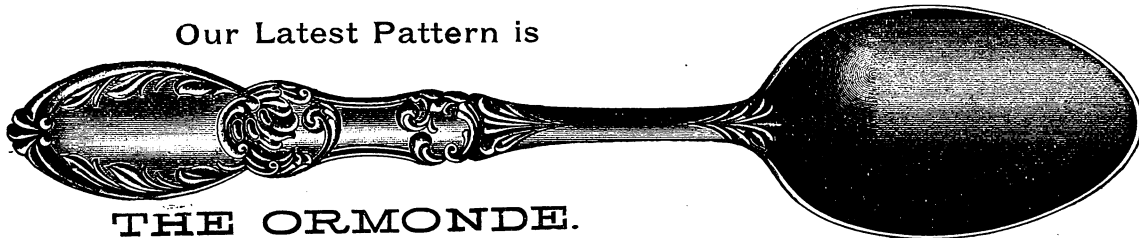
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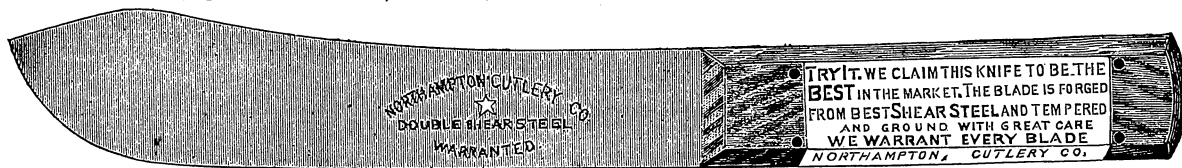
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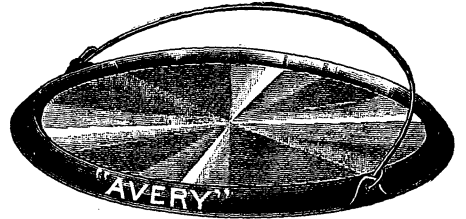
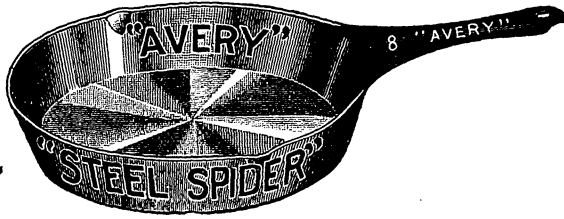
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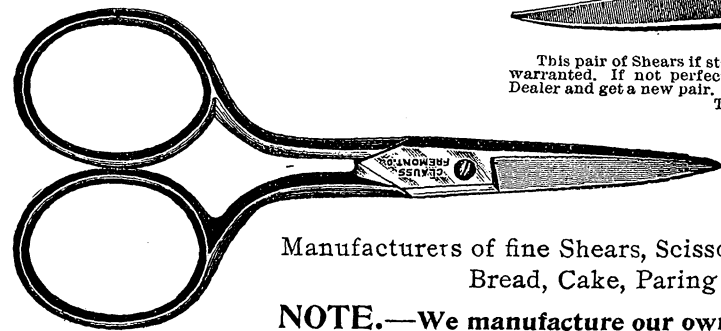
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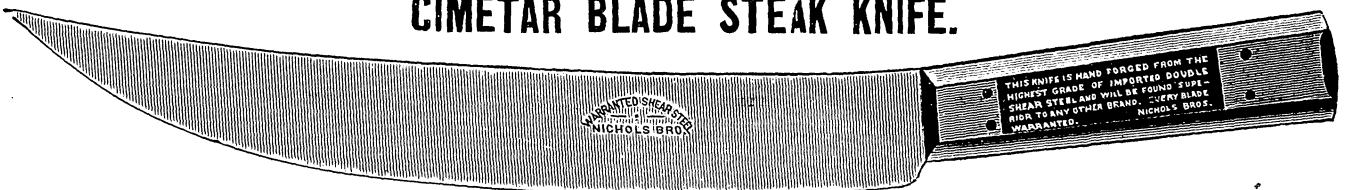


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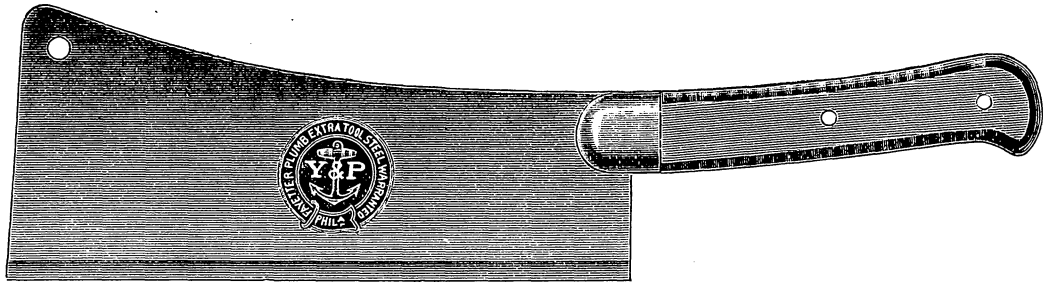
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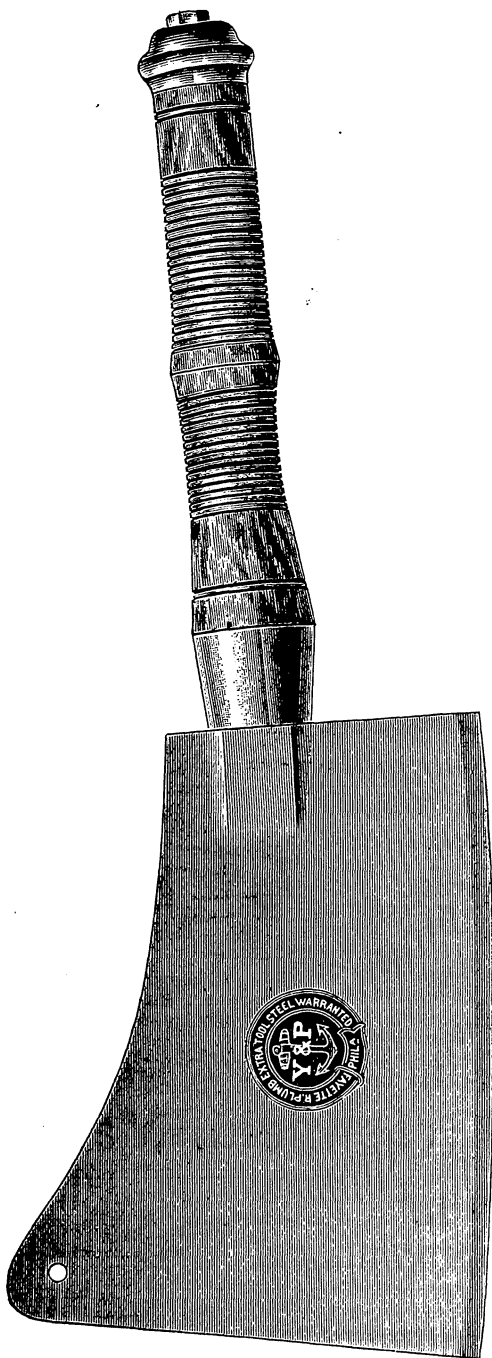


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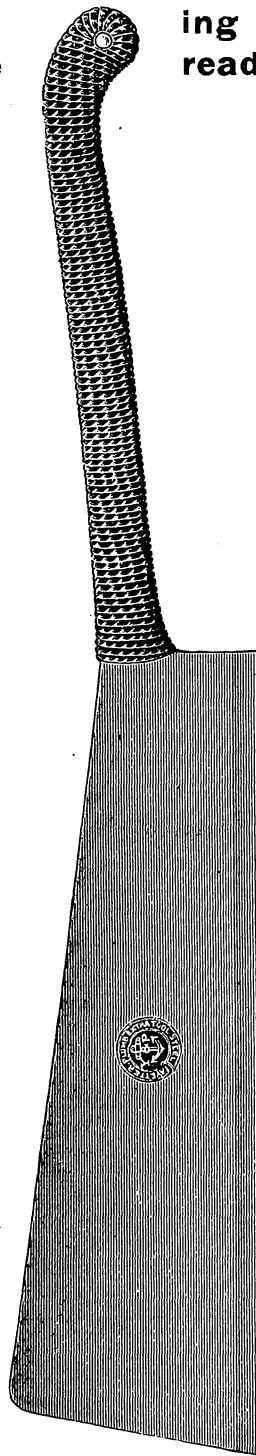
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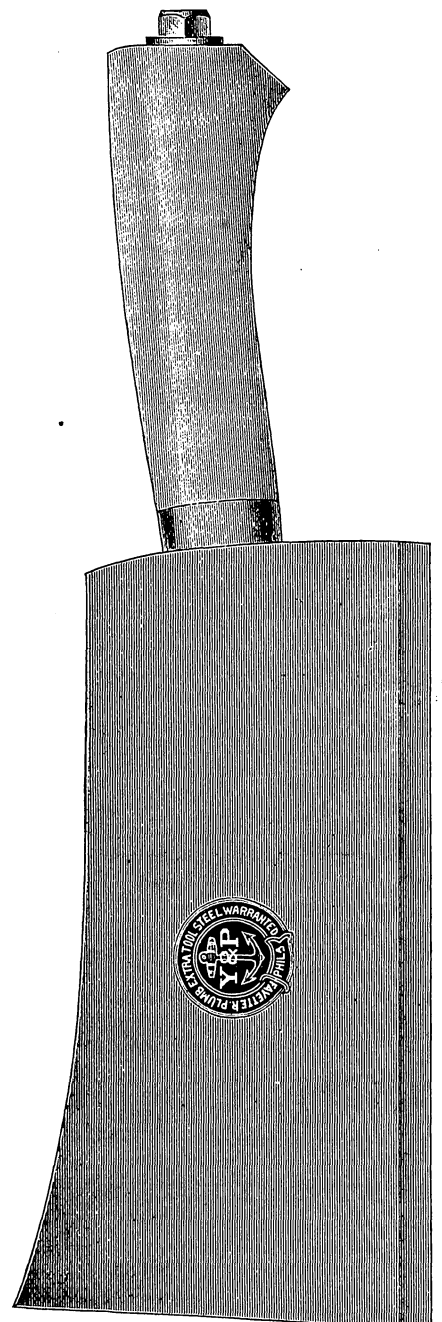
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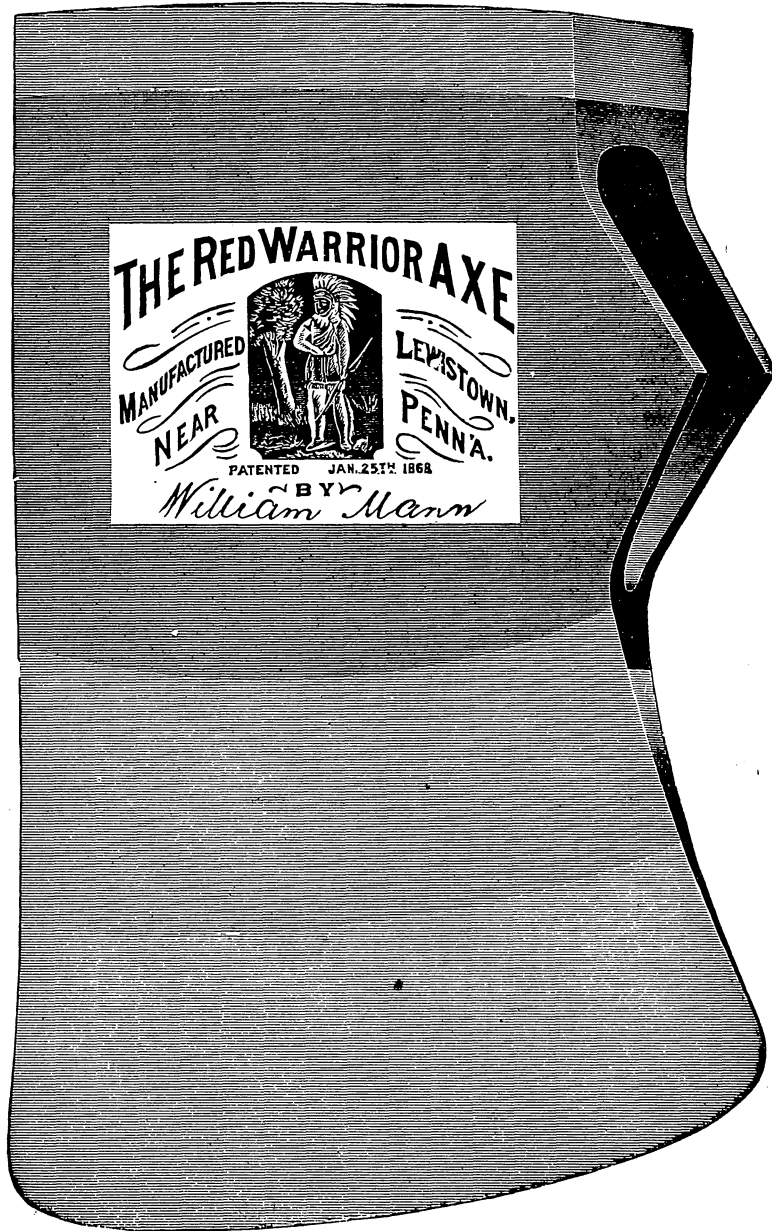
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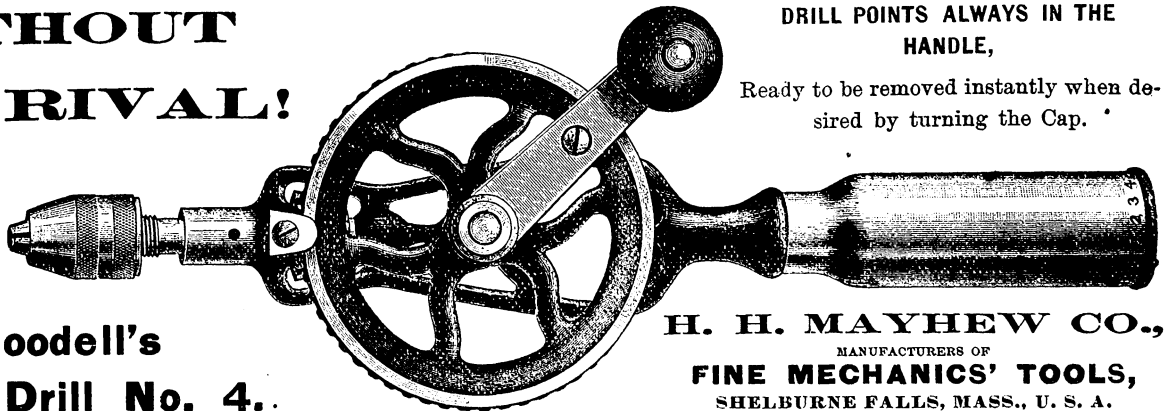
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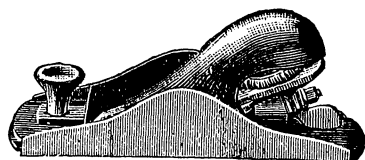
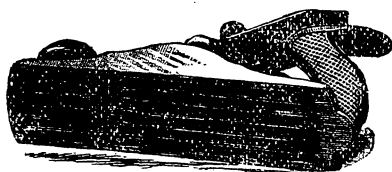


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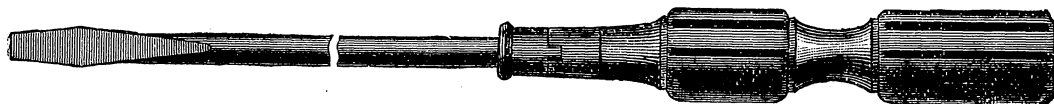
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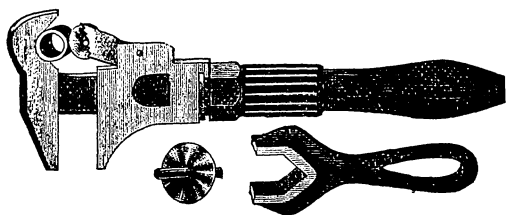


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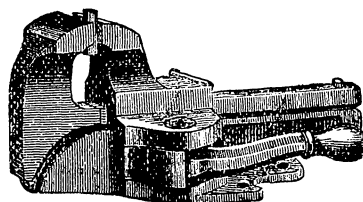


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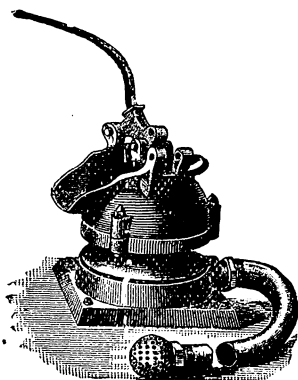
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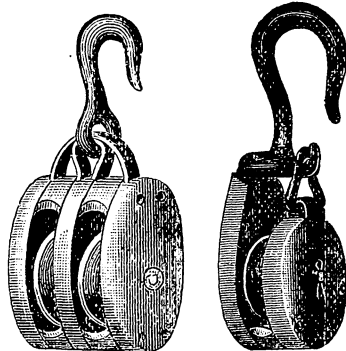
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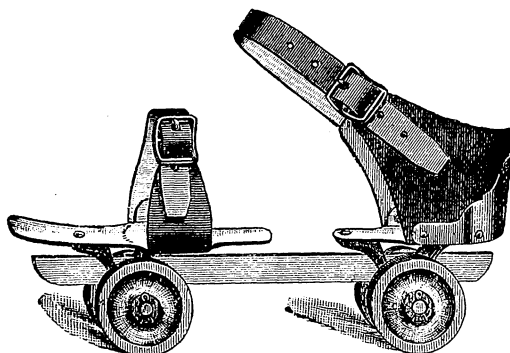
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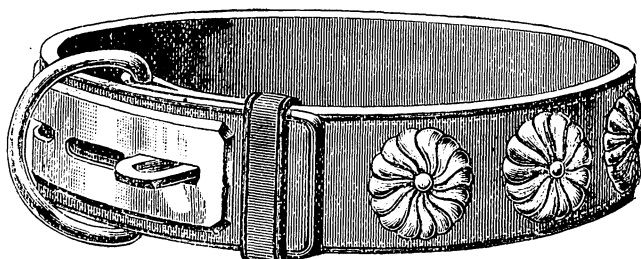
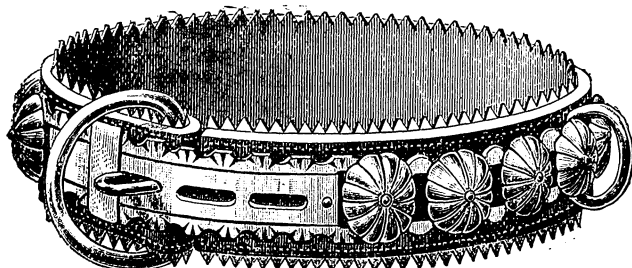
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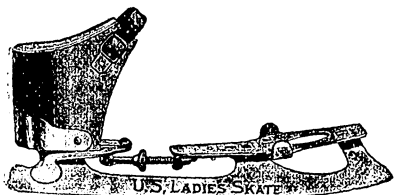


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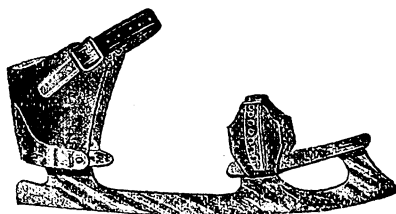
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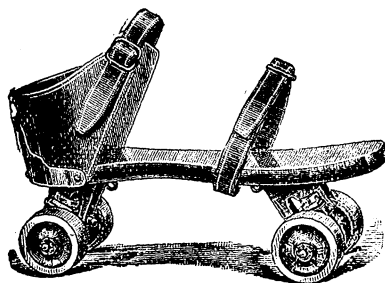
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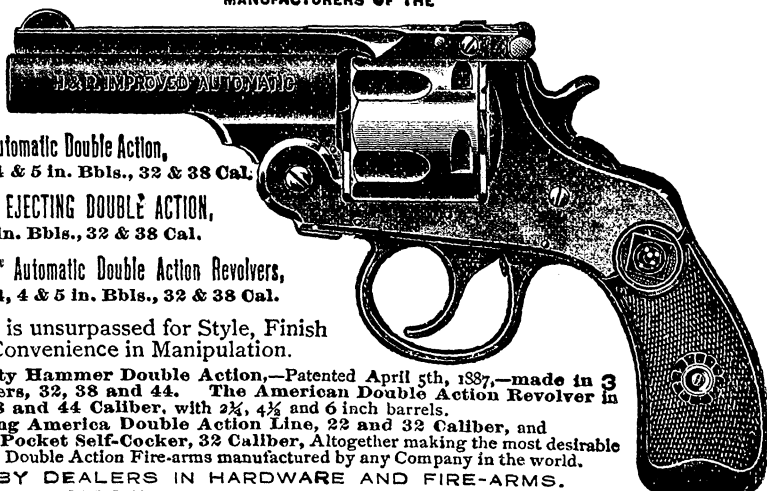


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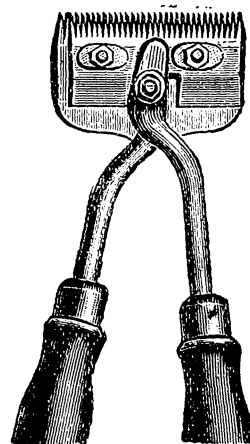
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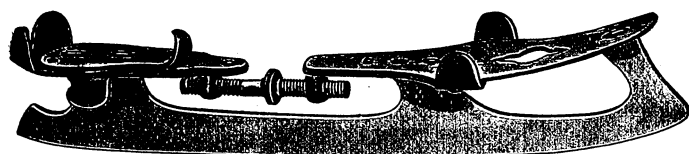


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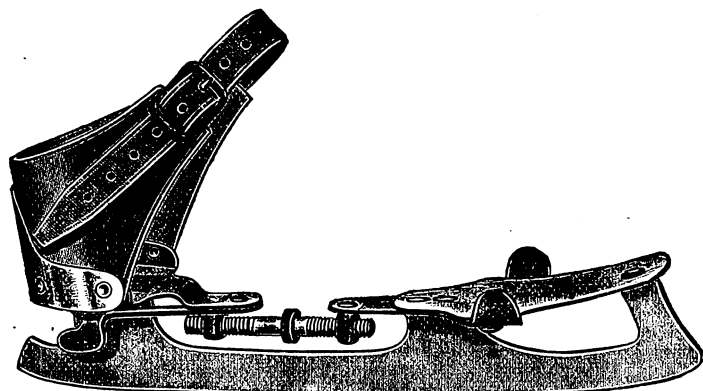
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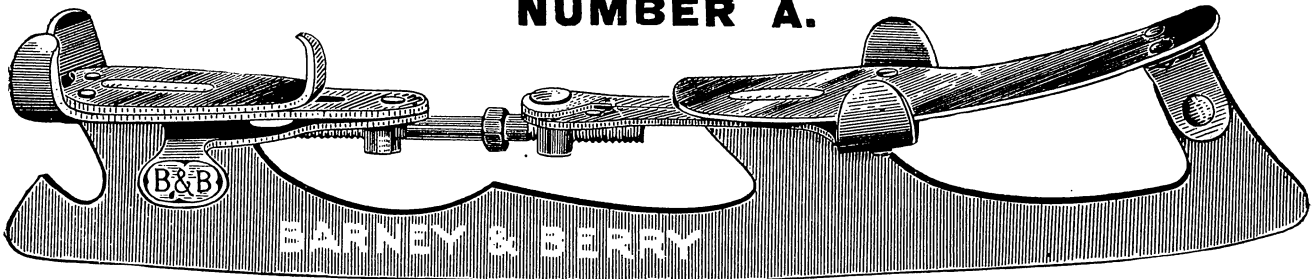
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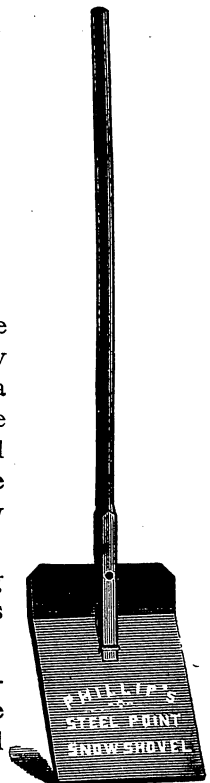
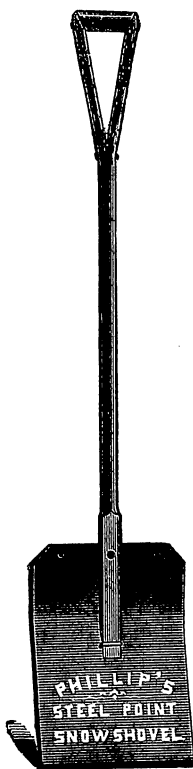
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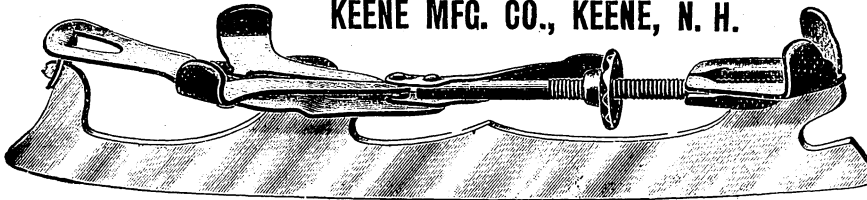
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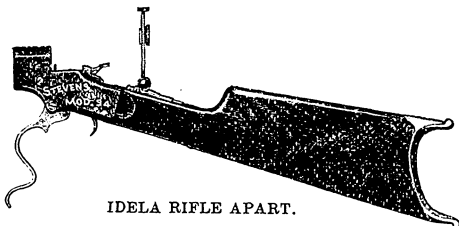
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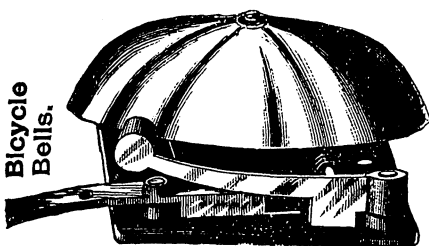
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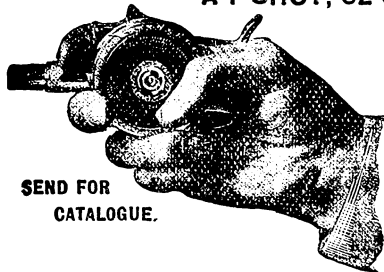
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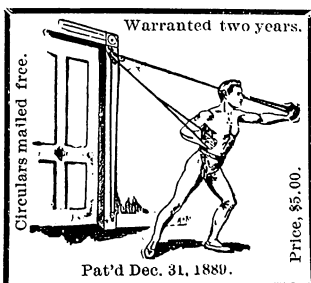
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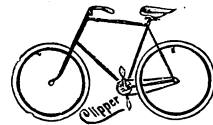
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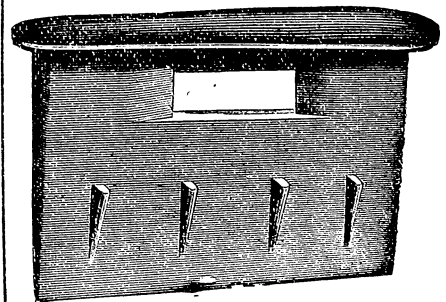
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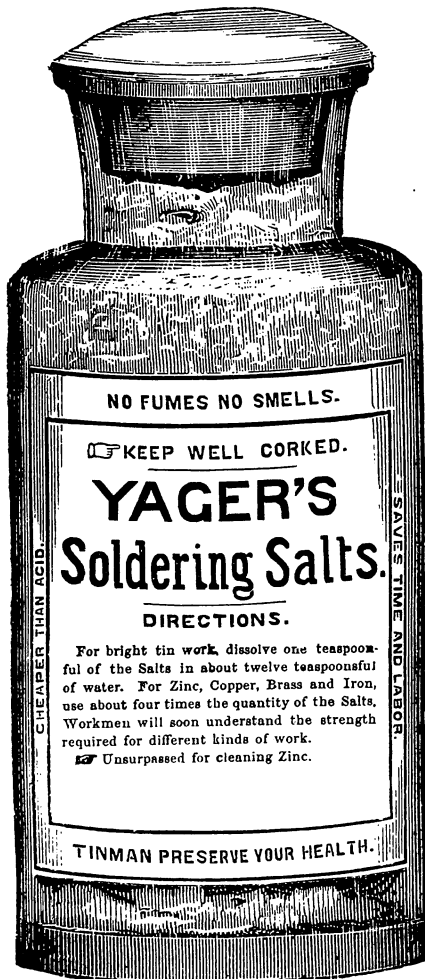
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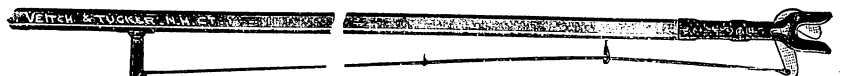
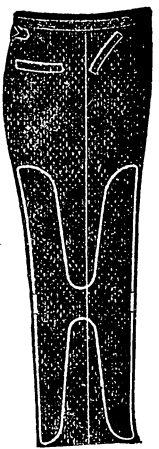
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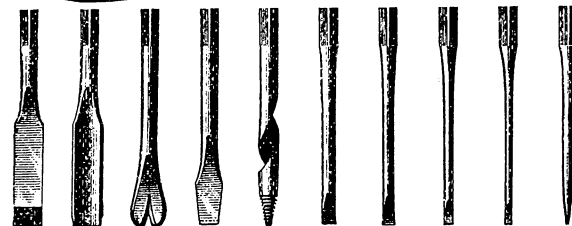
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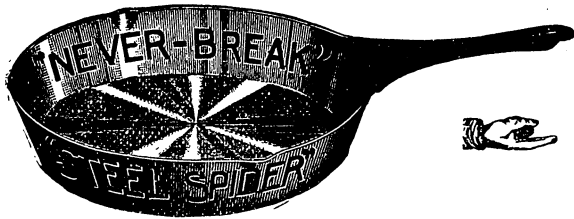
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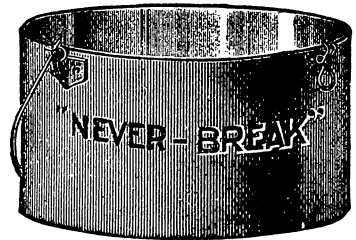


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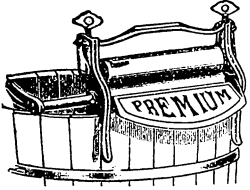
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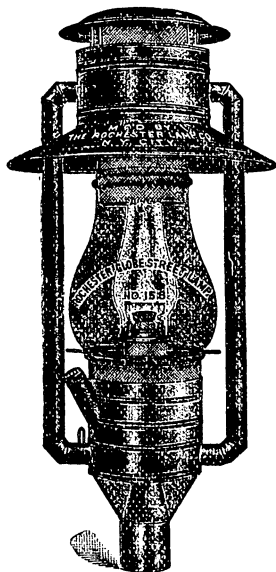
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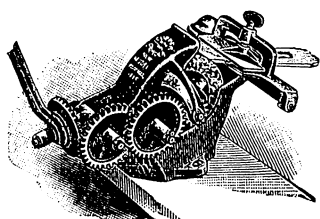
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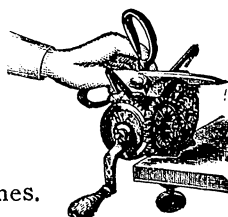


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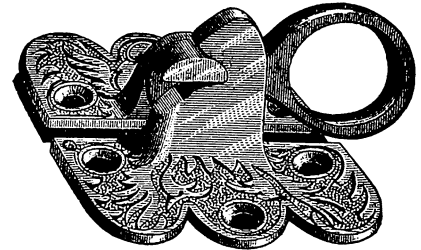


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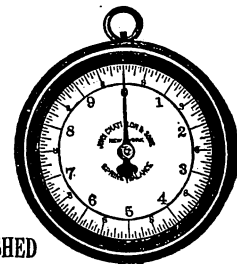
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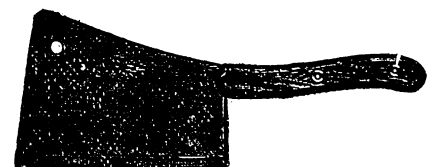
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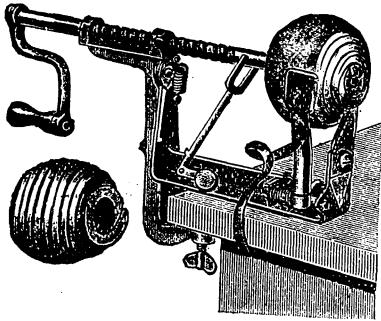
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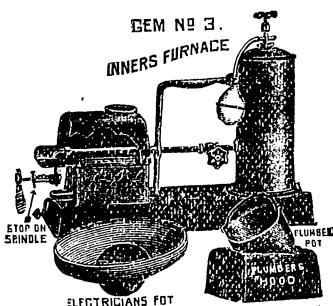
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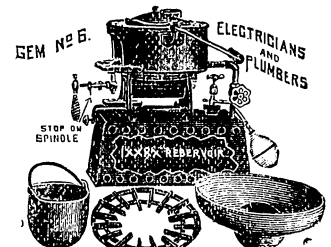
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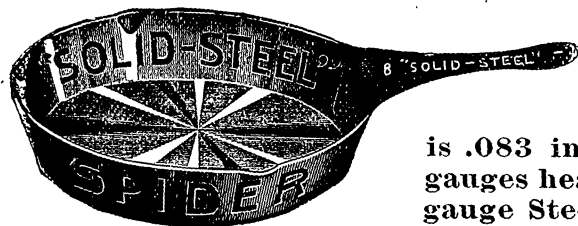
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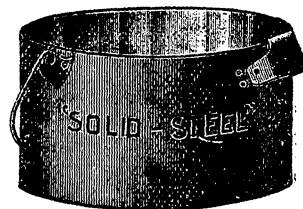


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The "New Process" (Coal) Oil Heater will comfortably heat a room twenty feet square, in cold weather. Is intended for use in Bed-rooms, Bath-rooms, Dining-rooms, Offices, Summer Resorts and all places where a moderate heat is required, without a flue connection.

We use with it our mammoth Globe-Incandescent lamp, with a special attachment on spreader, which, with the drum, can readily be removed, the spreader changed, the glass chimney placed in position and the Heater is converted into our 300 candle-power Globe-Incandescent lamp, the best in the world.

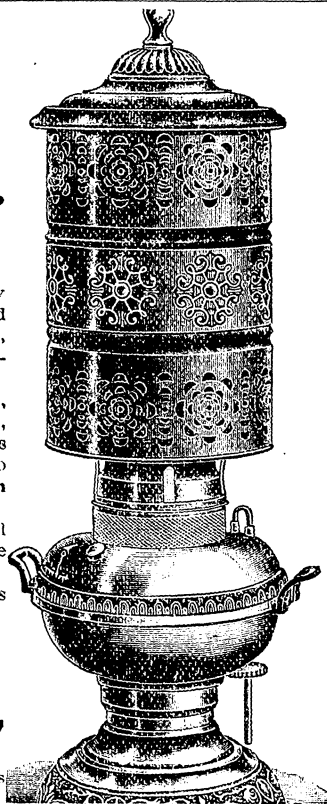
The "Heater" is very handsome. Brass fount, nickel trimmed, Russia drum, with ornamental top which can be removed, to use the grate on top for cooking.

No soot! No smoke! No odor! Construction of parts simple. Made with reference to being easily kept clean. Comfort! Convenience! Economy!

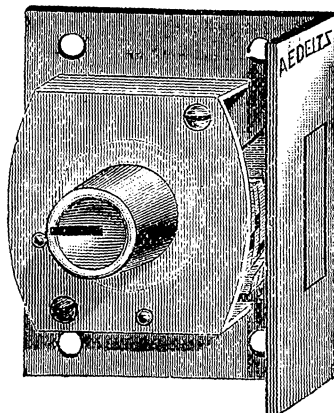
MANUFACTURED ONLY BY

**The Standard Lighting Co.,
CLEVELAND, OHIO.**

F. M. BORDEN & BRO., 118 N. 2d St., Philadelphia, Pa., Agents for Philadelphia.



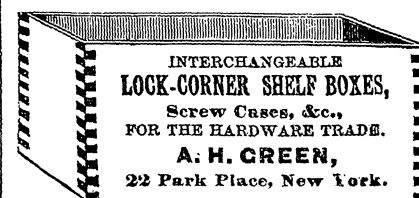
A. E. DEITZ



No. 51 Lock.

**J. C. McCARTY & CO., Agents,
97 Chambers and 81 Reade Sts., New York.**

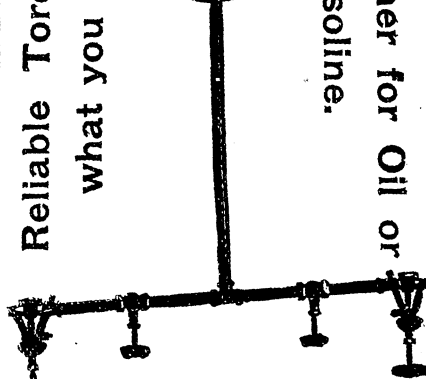
Factory, **BROOKLYN, E. D., N. Y.**



Reliable Torches are
what you want.



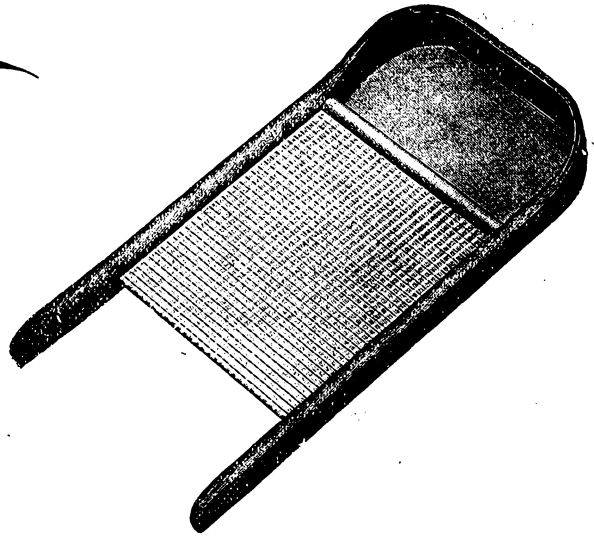
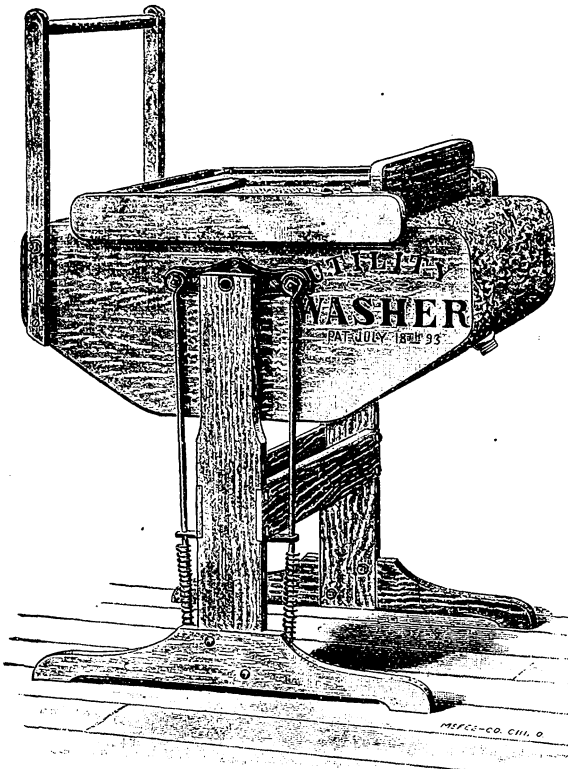
Made either for Oil or
Gasoline.



These Torches are particularly adapted for use in Factories, Foundries, Machine Shops, Rolling Mills, Blacksmith Shops, Warehouses, &c. They make a strong white light, are free from smoke and are not affected by wind or rain. They are convenient and portable. These Torches can be run at an expense of about one-half cent to one cent per hour, burning a bright, steady light which is ten times greater than the light of an ordinary gas burner. Write us for prices. A liberal discount given to the trade. Manufactured by **THE SCHNEIDER & TRENKAMP CO.,** Nos. 479 to 497 Case Ave., Cleveland, Ohio.



Utility

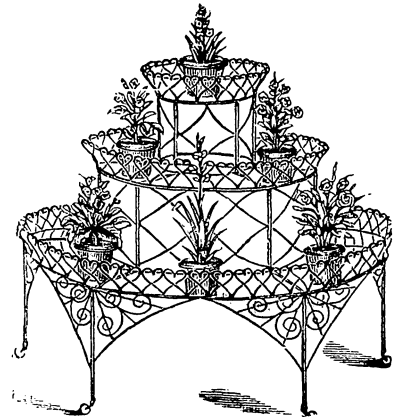
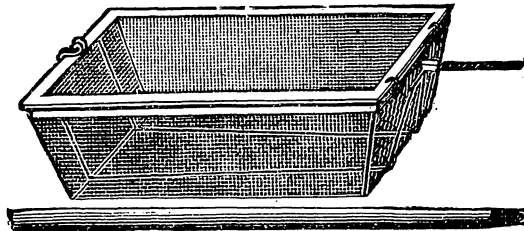
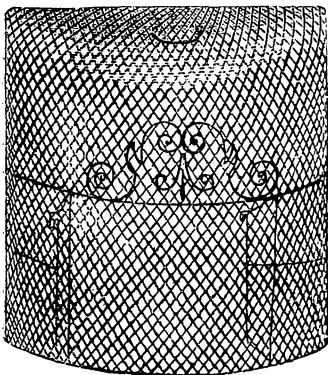


Washer and Board

Your customers can get along without both, but neither separately. The washer has the peculiarity of washing the clothes clean and not wear out either it or the operator. While the board is something entirely new yet thoroughly tested and proven the best made. Write for prices, please.

Olds Wagon Works,
Fort Wayne, Ind., U. S. A.

THE FRED. J. MEYERS MFG. CO., HAMILTON, OHIO,



MANUFACTURERS OF
Wire Guards, Corn Poppers, Flower Stands,
Sieves, Screens, Bank and Office Wire
Work, Railing of every description.
FIRST CLASS GOODS. LOW PRICES.

F. J. MATTISON, Eastern Agt., 69 Beekman St., N. Y.

A GOOD PROFIT TO DEALERS

A BALL BEARING WRINGER. THE CLEVELAND

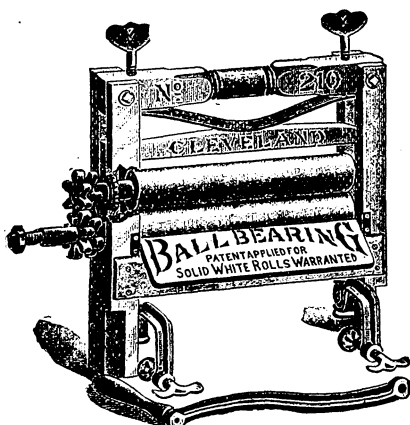
Runs like a bicycle. Very easy to operate, no other like it. Can be sold at higher prices and better profit than others, hence it pays to push it. It has been on the market over a year and is giving perfect satisfaction.

Send for Sample or Write for Catalogue and Prices.

ALL OTHER KINDS OF WRINGERS.

THE PEERLESS MANUFACTURING CO.,
CLEVELAND, OHIO.

We also make High Grade Bicycles.



OSGOOD & HOWELL, Pacific Coast Agents.

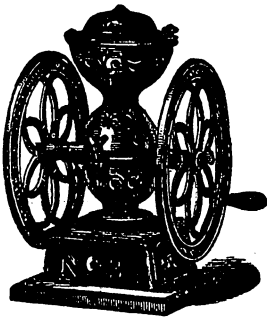
132 Market St., San Francisco, Cal.

THE ENTERPRISE M'FG CO. OF PA.

THIRD AND DAUPHIN STREETS, PHILADELPHIA.

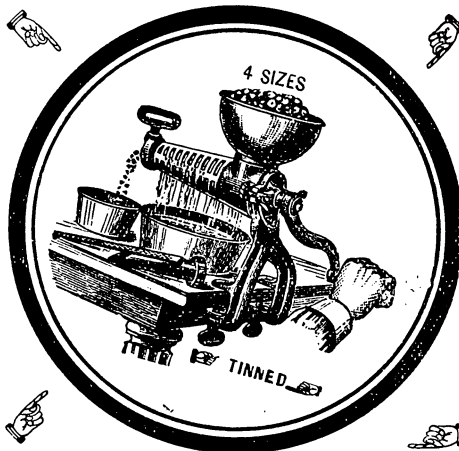
COFFEE MILLS.

28 Sizes.



\$1.25 to \$100.00.

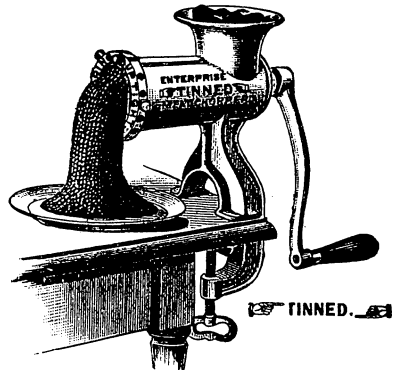
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No. 24, Price, \$3.00

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16 Sizes.



\$2.00 to \$275.00.

FOR SALE BY THE HARDWARE TRADE. SEND FOR OUR LATEST CATALOGUE.

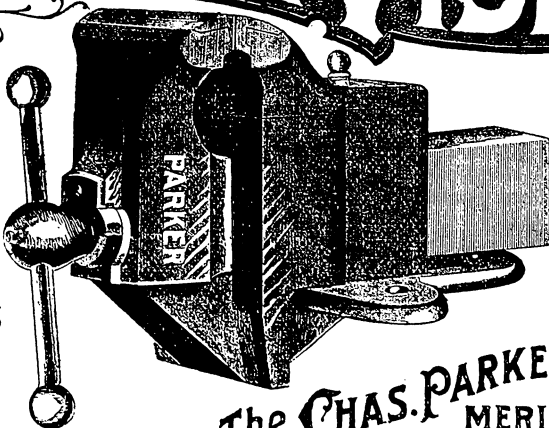
Ladd's Discount Book.

Price, \$3.00; Double Indexed Edition, \$4.00. Sent postpaid upon receipt of price, by

DAVID WILLIAMS. Bookseller and Publisher, - - - - - 96-102 Reade Street, New York.

PARKER VISE

HAS STOOD
THE TEST
OF OVER
FIFTY YEARS

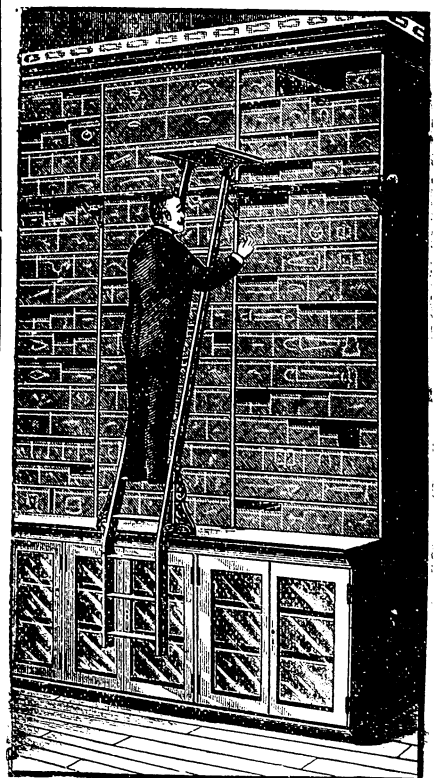


The CHAS. PARKER CO.
MERIDEN,
CONN.

This is a fac-simile of an 11x15 inch show card in gold and colors which is attractive in every hardware store. We will mail one to any hardware dealer who will place it conspicuously in his store.

THE BICYCLE STEP LADDER.

Especially adapted for Hardware Stores.

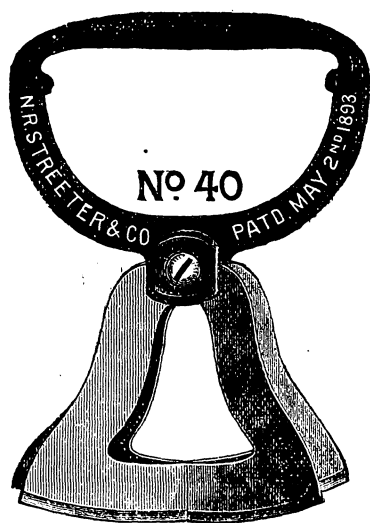


The newest, neatest, simplest, easiest operated and safest store ladder made. Highest Award World's Fair. Write us.

The Bicycle Step Ladder Co., 50 State Street,
Chicago, Ills.
N. Y. Agency, E. J. HUSSEY & CO., 80 John St.

N. R. STREETER & CO.,

Manufacturers of **SAD IRONS AND HARDWARE.**



"SENSIBLE" MINCING KNIVES.

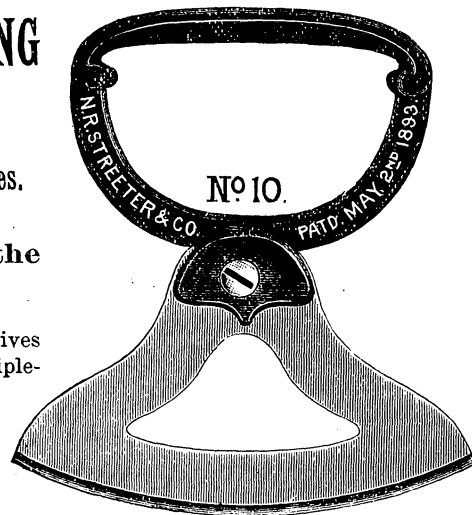
Tempered Steel Nickel-Plated Blades.
Multiple-Bladed Means Rapid Cutting.

These goods have become the standard of the market.

Our line of Sensible Mincing Knives covers all points where other Multiple-Bladed Knives fail.

BLADES can be **REMOVED** when they need sharpening. Easy to clean.

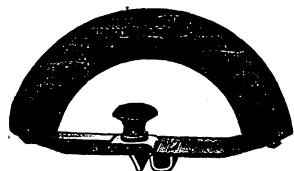
Write for our 1894 Catalogue and get our Prices.



Factories, Rochester, N. Y., Pottstown, Pa.

General Office, Groton, N. Y.

N. Y. Office, W. H. JACOBUS, 90 Chambers St.



PATENT APPLIED FOR.
The Steel Stretcher Handle,
for Mrs. Potts' Sad Irons,
in Hazel Wood only.
No. 110.

The Cleveland Wood Turning Co.,
710-726 Scranton Ave., Cleveland, O.

Special work in Handles and Wood Turning of all kinds. Our line of regular made Tool Handles is the best.

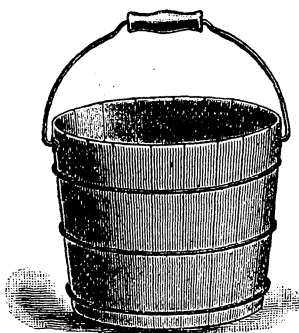
New York Office:

W. H. JACOBUS,
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Walnut, Japanned, No. 1.
Walnut, Tinned, No. 2.
Hazel, Japanned, No. 10.
Hazel, Tinned, No. 20.

ELECTRIC-WELDED Wire-Hoop Cedar Pail.



Pat. March 24th, 1891,
and April 10th, 1894.

Made of best selected **Virginia White Cedar**. Hoops are rust proof, are sunk in grooves, and are **twice** as strong as old style flat hoop. **Impossible** for this pail to fall down. Write for prices and catalogue.

Richmond Cedar Works

Manufacturers of Woodenware,
RICHMOND, VA.

THE "NOISELESS" STORE LADDER.

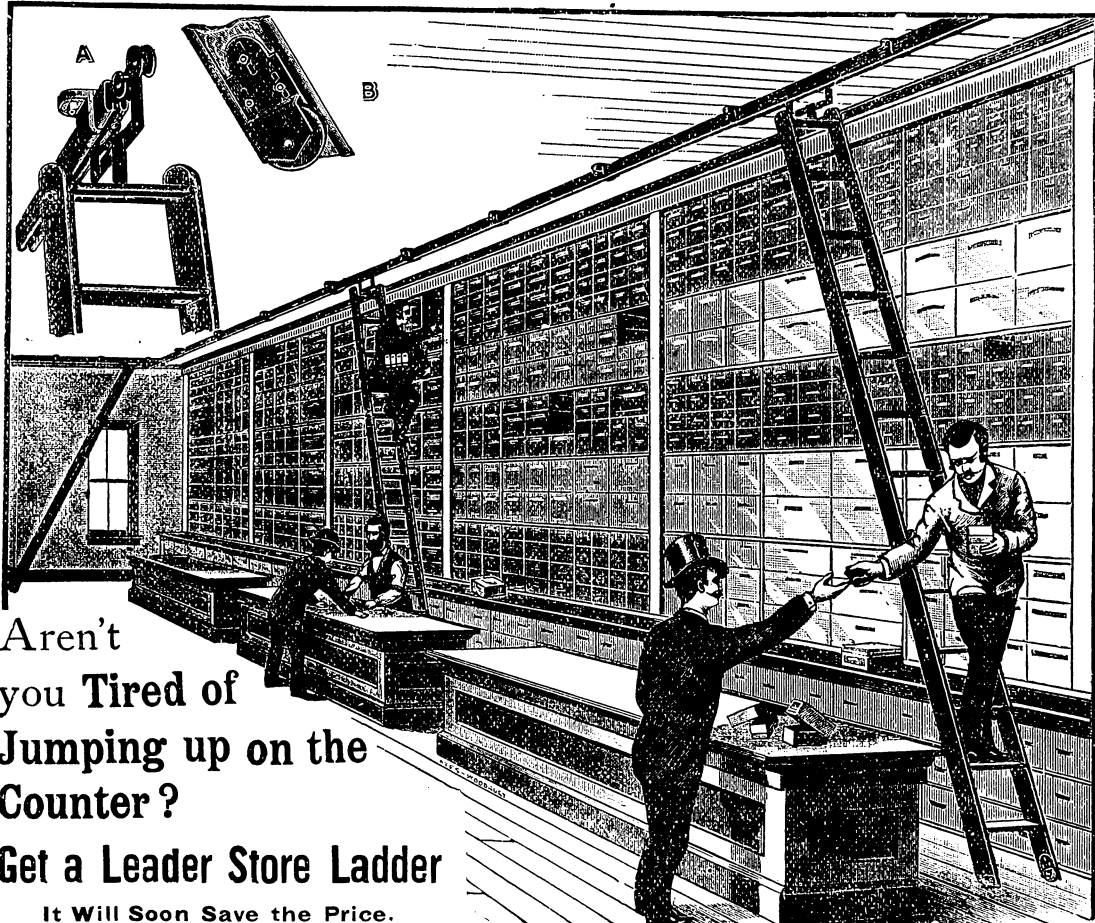


The latest and best. Perfectly noiseless. Neat in appearance.

Manufactured by
M. CROISSANT,
ALBANY, N. Y.

THE TROLLEY LEADER STORE LADDER.

See Our Advertisement Next Week.



Parlor, Barn and Fire Door Hangers.

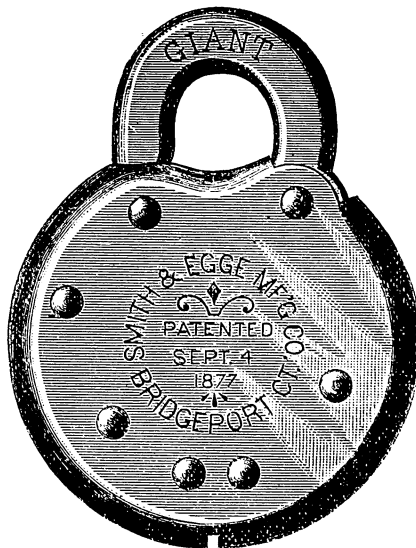
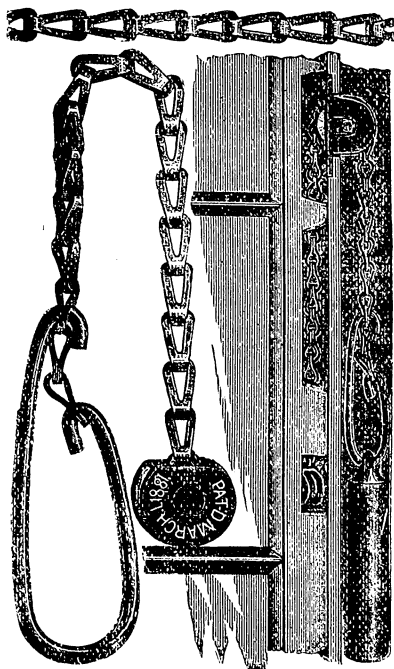
Aren't
you Tired of
Jumping up on the
Counter?
Get a Leader Store Ladder

It Will Soon Save the Price.

New England Agent, L. H. Tourtellotte, No. 94 Pearl St., Boston, Mass.; New York Agents, H. B. Newhall Co., No. 100 Chambers St.; Philadelphia Office, No. 721 Jayne St.; San Francisco Agents, Palace Hardware Co., No. 603 Market St.

THE COBURN TROLLEY TRACK MFG. CO., - HOLYOKE, MASS.

THE SMITH & EGGE MFG. CO., BRIDGEPORT, CONN.



THE GIANT PADLOCK.
Centennial Award. "Superior in Every Respect."

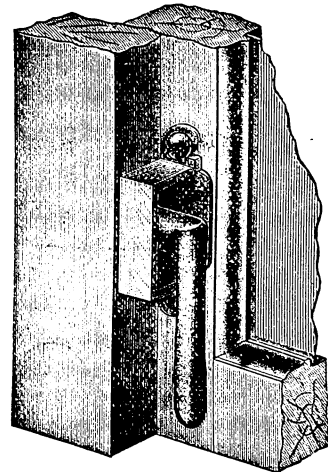
This is one of the best selling locks in the market, and affords the dealer a large profit. It is thoroughly and strongly made of the best material—very handsome in appearance, and every Lock is warranted. Orders solicited.

THE GIANT METAL SASH CHAIN

is a substitute for cord in hanging weights to windows. It is manufactured by us only, and by automatic machinery, patented and owned exclusively by ourselves, and whereby we secure uniformity of construction and quality. We have been to great expense in producing a metal having all the qualities and conditions requisite for making suitable chain for this purpose, and to prevent other chain of the same pattern of link and of the same general appearance, but made from an inferior metal, being offered as the same thing, we patented the word "Giant" as a Trade-Mark, as applied to either metal or chain. Trade-Mark Registered April 16, 1878, and October 22, 1878, and our metal is therefore known in the market as "Giant Metal," and our chain as "Giant Metal Sash Chain."

DOLBER'S SASH FASTENER.

Patented Aug. 1, 1893.



BEST DEVICE EVER INVENTED FOR FASTENING
NEW OR OLD

Outside Windows.

The above shows Fastener as applied to the side of an outside window, fastening same to the outside casing.

Saves Time, Labor and Expense.

Mounted samples by mail 15c.

F. V. WOOSTER, 66 Beverly St., Boston.

Electric Traction on Railways and Tramways. By A. BECKENBAUM. The author has endeavored in this book to summarize as concisely as possible the present state of electric traction and to describe the various methods and constructive details which are to-day in use or which have marked consecutive steps in the development of the art. 218 illustrations, 12mo, cloth, \$4.00

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TEMPORA MUTANTUR ET NOS MUTAMUR IN ILLIS.

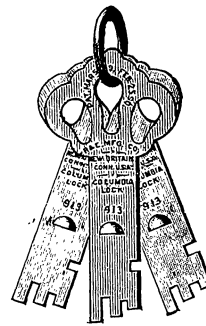
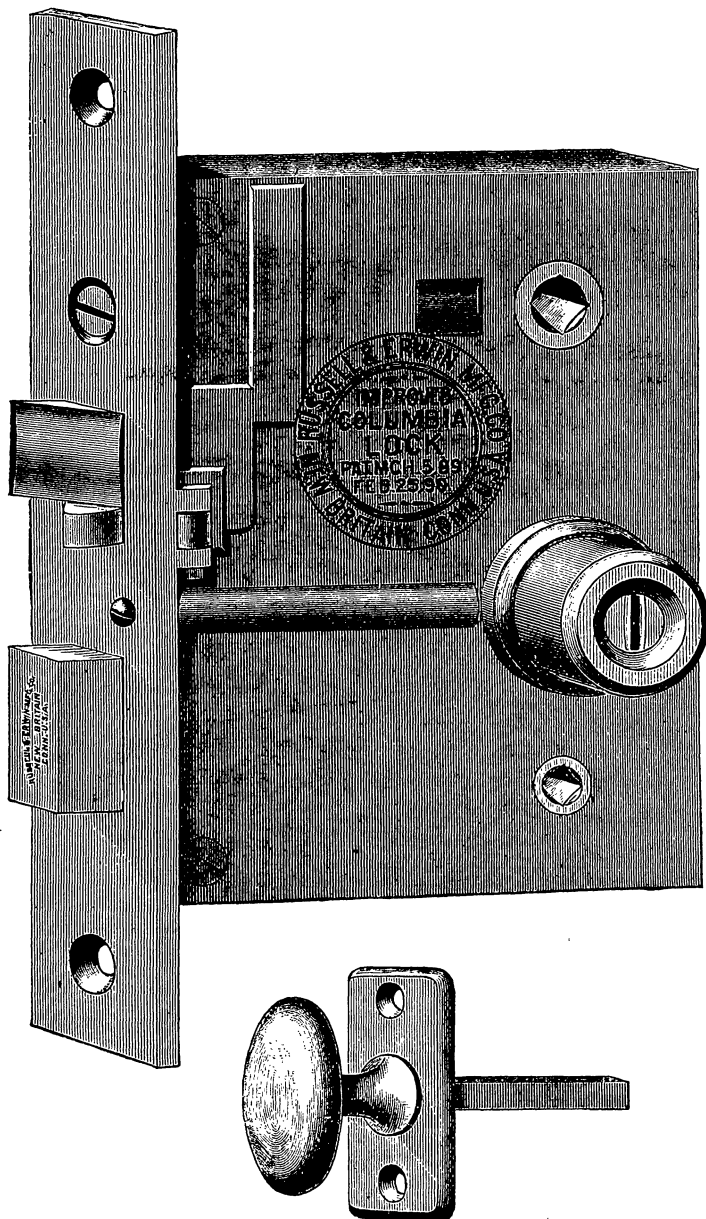
Russell & Erwin Manufacturing Co.,

NEW BRITAIN, CONN., NEW YORK, PHILADELPHIA, BALTIMORE, LONDON,

MANUFACTURERS OF THE

Columbia Cylinder Lock.

Easily Applied. No Adjustment of Cylinder Required.



LOCKS
FOR FRONT
AND
VESTIBULE
DOORS
AND FOR
OFFICE AND
PUBLIC
BUILDINGS.
DEAD
LOCKS AND
NIGHT
LATCHES.

FRONT DOOR LOCK No. C 1230.

Three-quarter size cut.

Columbia Cylinder Lock.

Especially Adapted for Large Office Buildings.

READING HARDWARE COMPANY, READING, PA.

MANUFACTURERS OF

Door Locks

AND

FINE HARDWARE.

Artistic Bronze Goods

IN ALL FINISHES.

“VASSAR”

Cylinder Locks and Latches.

“VASSAR”

RIM NIGHT LATCHES
and RIM DEAD LOCKS

are made with a Patent Spindle which is self-adjusting—fitting all doors without filing or cutting. No others have this feature.

“DUPLEX”

COLD ROLLED

Wrought Butts

Made of double thicknesses of Wrought Steel and Wrought Bronze. Cold Rolled, Polished and Plated in the best possible manner. They are superior to the ordinary kinds.

READING HARDWARE CO.,

NEW YORK, 96 and 98 Reade St.
PHILADELPHIA, 514 Commerce St.
CHICAGO, 73 Wabash Ave.

Factories, - READING, PA.

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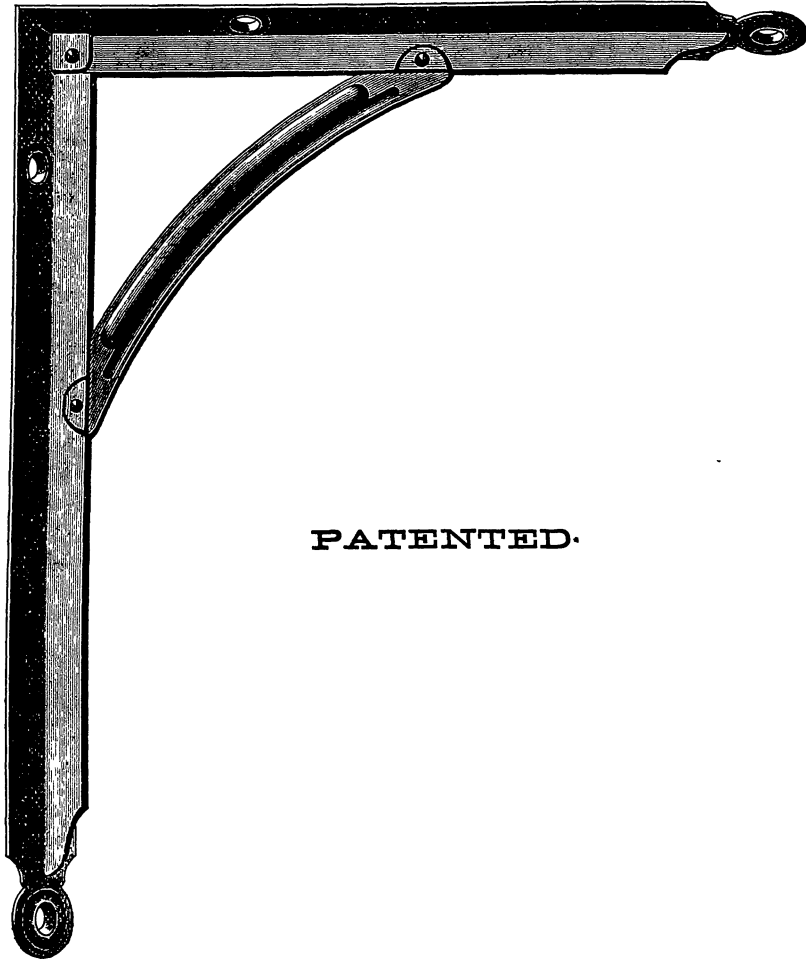
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A Perfect Shelf Bracket

—: MADE OF:—

WROUGHT STEEL.

LIGHT! = STRONG! = ELEGANT!



PATENTED.

As a result of long and careful study and much experimenting we are able to offer the trade a

STEEL SHELF BRACKET

which is far superior to anything of the kind heretofore produced, and which we believe to be a

PERFECT ARTICLE!

We base our faith in these assertions on the following points of

SUPERIORITY:

- 1.—The use of the **arched** or **angle** forms of steel in the wall and shelf plates, which gives **much more strength** with less metal than if made flat.
- 2.—The **Corrugation** of the brace, which renders it secure against buckling or bending sideways under the severest strain.

The application of these principles makes a **Light, but Very Strong Bracket.**

PRICES ON APPLICATION.

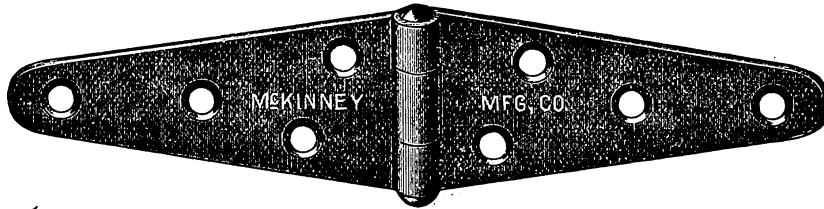
THE STANLEY WORKS, New Britain, Conn.
79 Chambers St., N. Y.

STEEL HINGES AND BUTTS.

—STANDARD GOODS.—

McKINNEY MFG. CO., - ALLEGHENY, PENN.

SEND FOR
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ORDERS FILLED
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“NONE BETTER.”

—THE— STANDARD UNION PADLOCKS —AND— HARDWARE SPECIALTIES

are the recognized leaders in their respective lines. Do not fail to get our special fall trade price-list; it is new and away down.

Write us for estimates on Extra Fine Soft Grey Iron and Brass Castings.

We have exceptional facilities for manufacturing articles of all kinds from iron and brass. Get our prices and save money.

Union Lock & Hardware Co., Ltd.,
LANCASTER, PA.

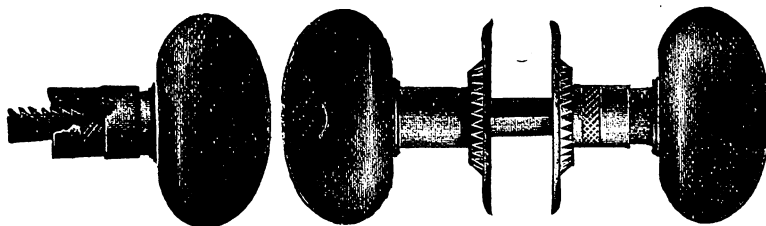


ALUMINUM

Ingots, Sheets, Rods, Tubes, Wire and Castings, Cooking Utensils and Table Ware, Tea and Coffee Pots, Chafing Dishes, Rice Boilers, Tea Kettles, &c.

WRITE FOR THE WOHLER ALUMINUM COMPANY, CATALOGUE. 55 Jackson Street, - Chicago, Ill.

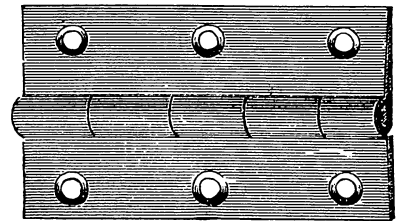
Sectional cut showing construction of Knob.



Half size cut of knob as applied to door. No side screws or adjusting washers.

Don't you want your stock to represent the latest and most improved up to date Hardware? The Whipple Patent Door Knob is the latest and best Door Knob attachment ever made. Give it a trial. PERRY & WHIPPLE CO., New Haven, Conn.
New York Sales Agent, E. G. SHEPARD, 142 Chambers Street.

THE CLARK MFG. CO.,
Blind Hinges, Gate Hinges, Door Butts,
And other HARDWARE SPECIALTIES,
BUFFALO, N. Y.



Cast Brass Butt Hinges

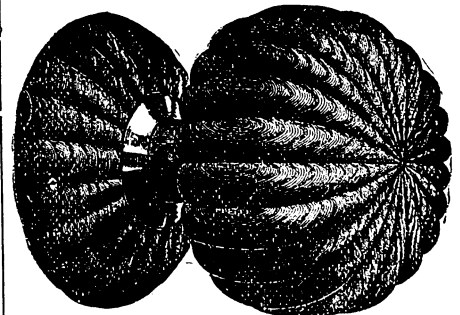
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W. & J. TIEBOUT,

Nos. 16 & 18 Chambers Street, New York.

MANUFACTURERS OF

BRASS, GALVANIZED & SHIP CHANDLERY
HARDWARE.



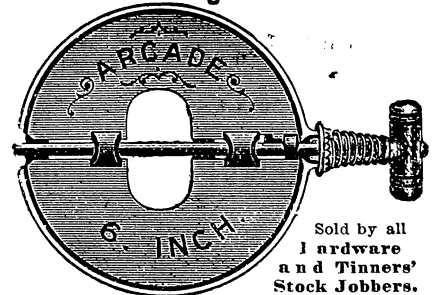
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DOOR SPRINGS AND CHECKS
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NEW GOODS. NEW PRICES.

Send for New Price-List.

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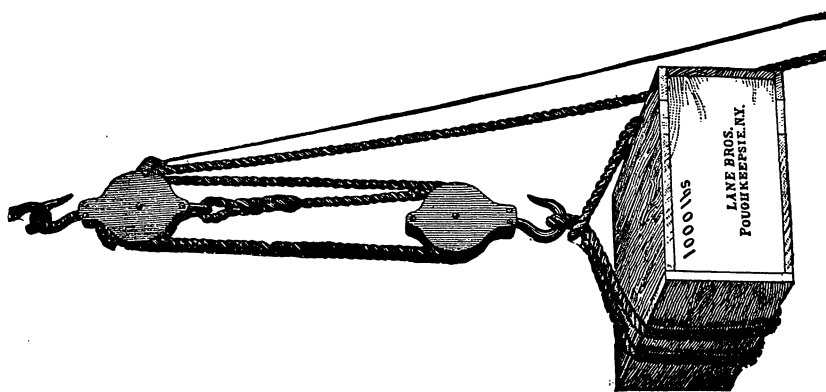
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Sold by all
Hardware
and Tinnery
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Electric Toy Making, Dynamo Building and Electric-Motor Construction. By T. O'CONOR SLOANE, A.M., E.M., Ph.D. This work treats of the making at home of electrical toys, electrical apparatus, motors, dynamos, and instruments in general and is designed to bring within the reach of young and old the manufacture of genuine and useful electrical appliances. The work is specially designed for amateurs and young folks. Very fully illustrated..... \$1.00

For sale by David Williams, 96-102 Reade St., N. Y.



LANE'S SELF-LOCKING TACKLEBLOCKS

Anti-Friction Steel Bushings,
Holds the load at any point, and always sure.

SEND FOR CIRCULAR.

For sale by the Hardware trade.

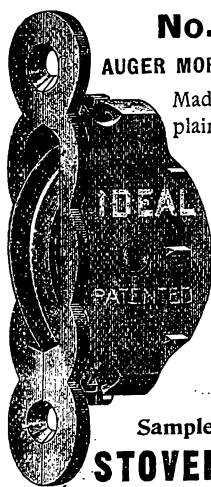
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LANE BROS.
POUGHKEEPSIE, N. Y.

Ideal Sash Pulley

No. 60—65.

AUGER MORTISE—FACE PLATE.



Made with two inch wheel, plain and polished, cone axle bearings, noiseless and easy running; markers on the side to lay off the centers to bore the holes by.

The best and most uniformly made low-priced Sash pulley on the market.

Sample Free.

STOVER MFG. CO.,
145 River St., Freeport, Ill.

SASH WEIGHTS

E. E. BROWN & CO.,

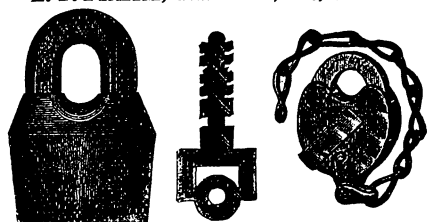
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PHILADELPHIA, PA.

ESTABLISHED 1879.

KEYSTONE LOCK WORKS.

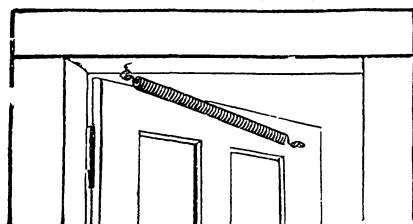
E. T. FRAM, Lancaster, Pa., U. S. A.



Originators, designers, patentees and manufacturers of all the leading popular styles of **PADLOCKS**, Key-Locking Scandinavian with our patent Inter-Locking Tumblers; the only reliable lock of this style ever made. **SELF-LOCKING** Scandinavian of the highest type of perfection. Dust Proof Railroad, Freight Car and Switch Padlocks. Brass, Bronze, Steel and Malleable Iron Padlocks for all purposes and in all finishes. 131 different kinds. Write for our new 100-page catalogue.

SUPPRESS, DUNN & ALDER, General Agents,
97 Chambers St., NEW YORK.

THE PERFECT DOOR SPRING.

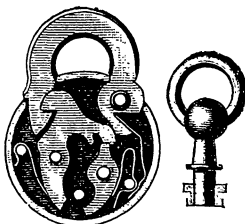


Cheap, Simple, Durable, Effective.

Best Screen Door Spring made. Send for our list of references, comprising some of the first houses in the land. They sell readily, and that is what you are looking for. Drop us a postal.

COILED WIRE BELTING CO.,
40 & 42 Noble St., Jersey City.

Defies Competition for Quality and Price.



PATENT PERFECTION

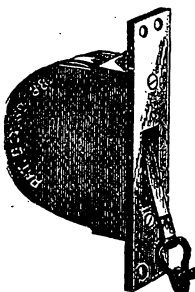
PADLOCK.

Eight Tumblers. Key turns both ways

Sizes, $\frac{1}{4}$ inch to $2\frac{1}{4}$ inches, of cast bronze. No steel or iron used, cannot rust, and cannot be picked. Also, $\frac{1}{4}$ and $\frac{1}{2}$ inch Padlocks, opened with a common pin, in brass and nickel, for cats and small dogs. The best Railroad Switch and Car Lock in the world. Adopted by the United States Treasury for bonded warehouses.

AMES SWORD CO., Chicopee, Mass.

Send for Price-Lists and Circulars.



DOES IT PAY?

To buy an inferior article, which your trade condemns, when you can get

THE CALDWELL SASH BALANCE.

The best material, right principle and care in making and testing have made it the **LEADER** for five years. Write to

CALDWELL MFG. CO., Rochester, N. Y.



STAR LOCK WORKS, PHILA.

W. & L. WOLF,

MANUFACTURERS OF

1st QUALITY ONLY

SCANDINAVIAN

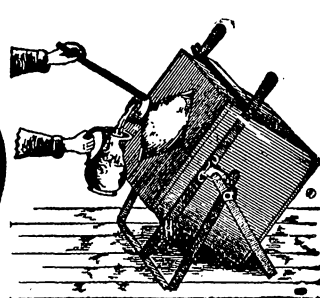
AND

Spring Padlocks,

Trunk & Case Locks,

Carboy Stands, &c.

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WHY USE WOODEN OR HEAVY STEEL BLOCKS

WHEN THE STEEL AND IRON

TACKLE BLOCKS

—MADE BY—

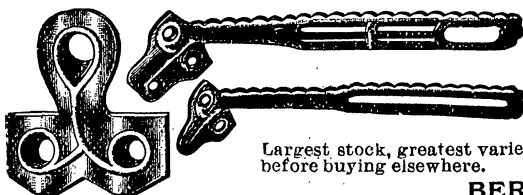
The Cleveland Block Co.,

CLEVELAND, OHIO, U. S. A.,

ARE BETTER IN EVERY WAY.

No waste material. Every ounce of weight in the line of strength. No clumsy outside straps or bolts. As light as wooden blocks and vastly more durable. They wear, but never break. Sheaves interchangeable.

General Agents: **Topping Brothers**, 92 Chambers Street, New York.
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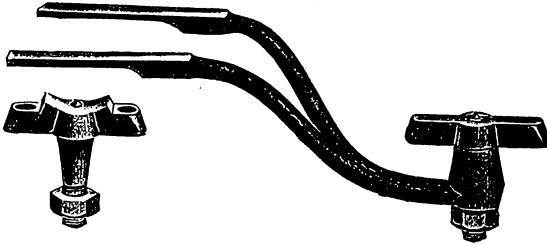
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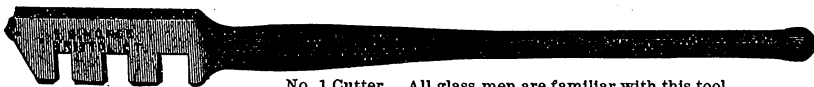
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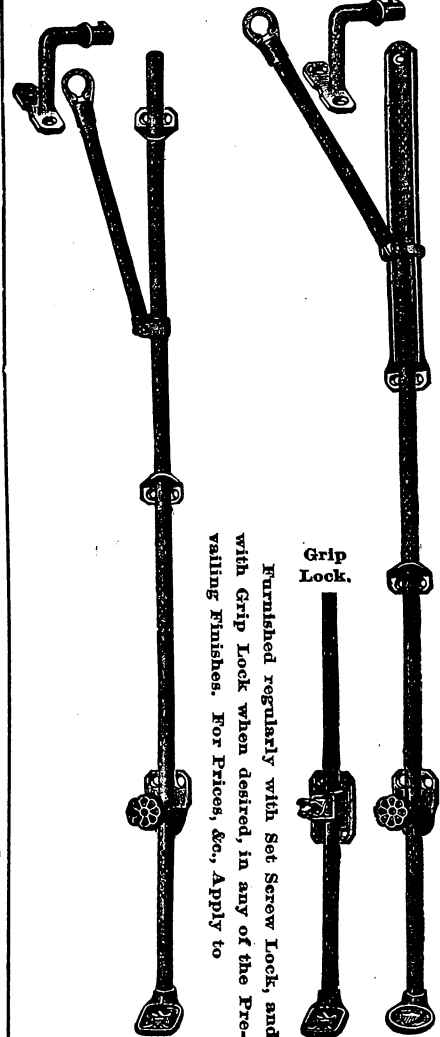
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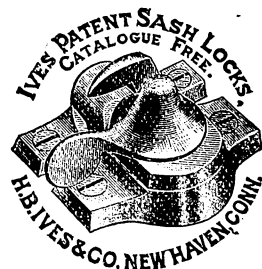


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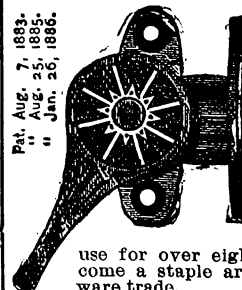
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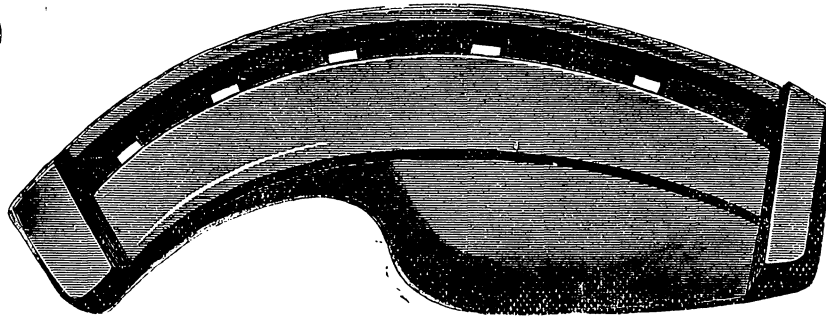
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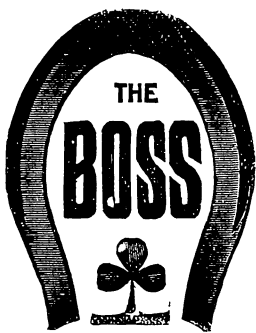
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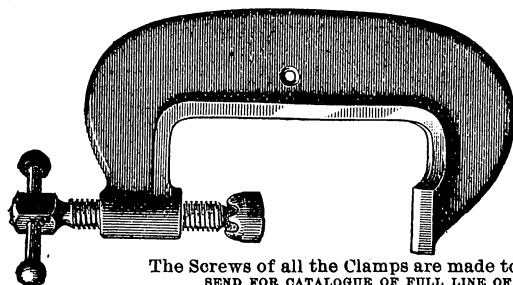
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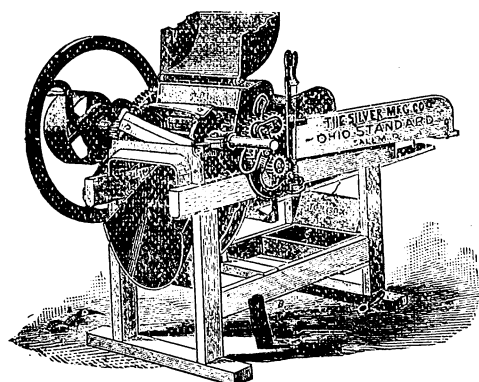
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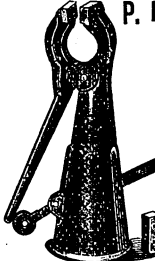
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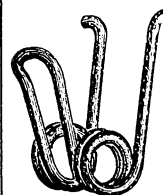
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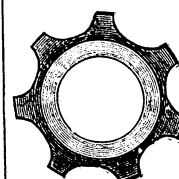
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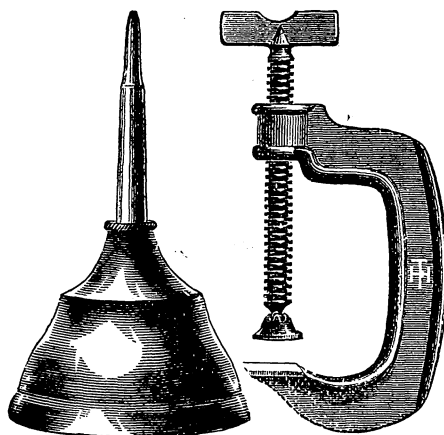
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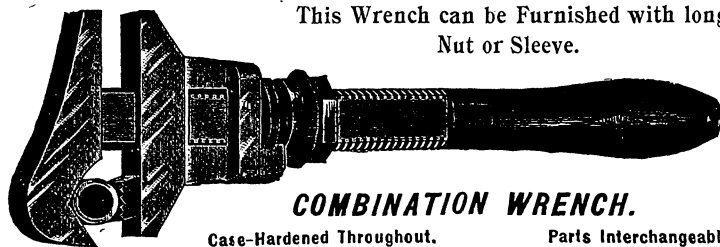
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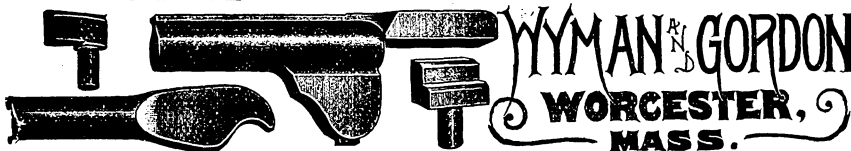
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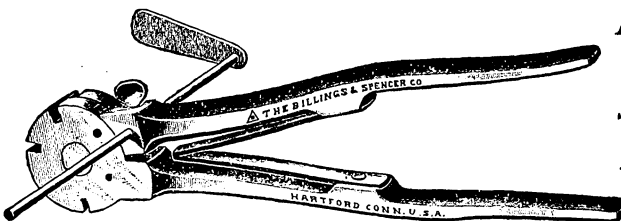
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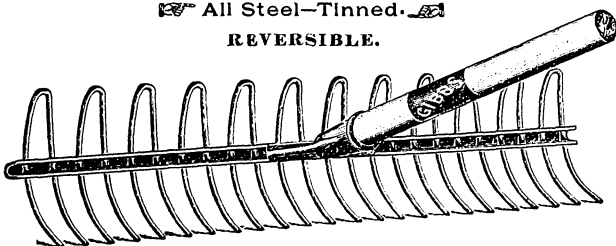
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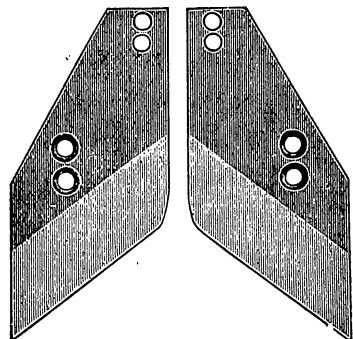
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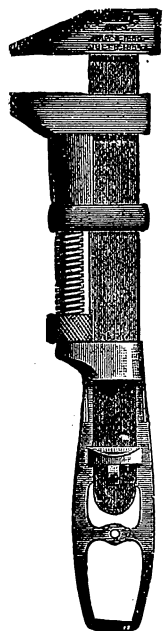
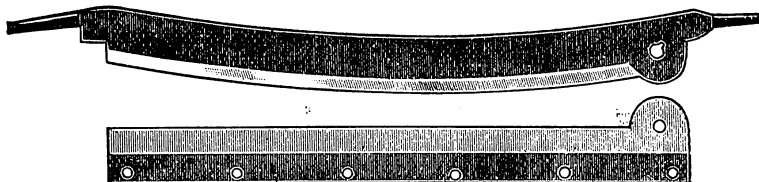
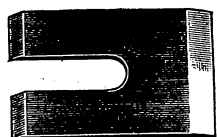


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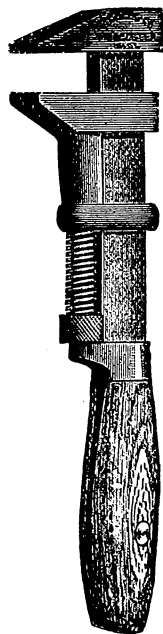
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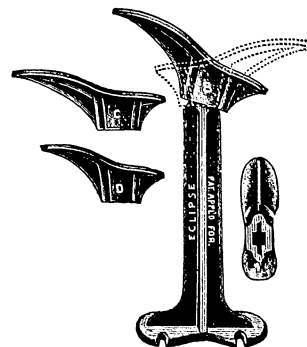
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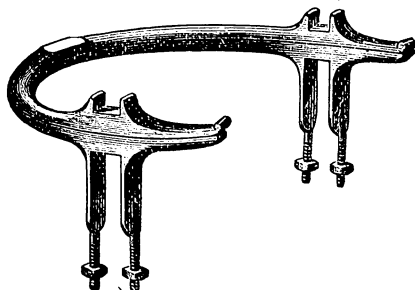


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you smile.

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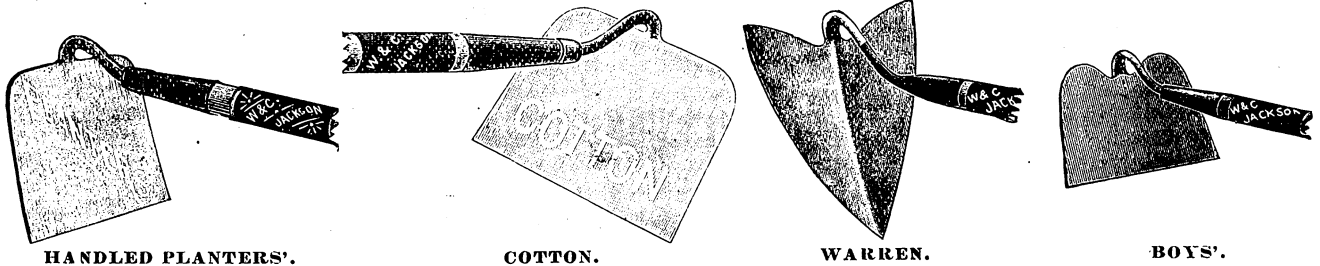
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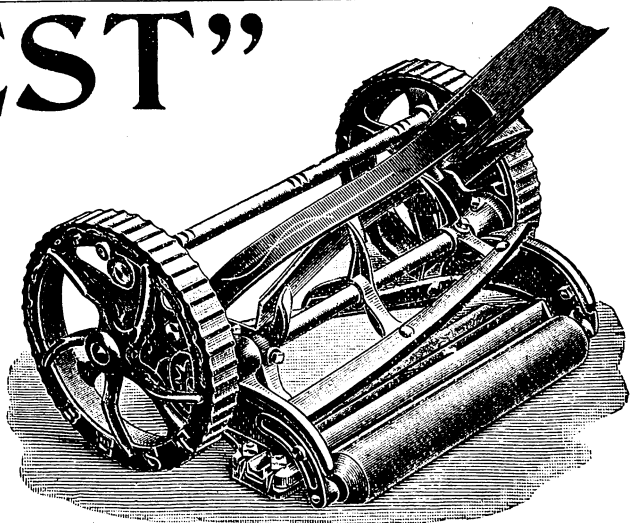
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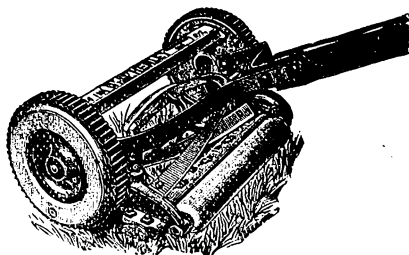


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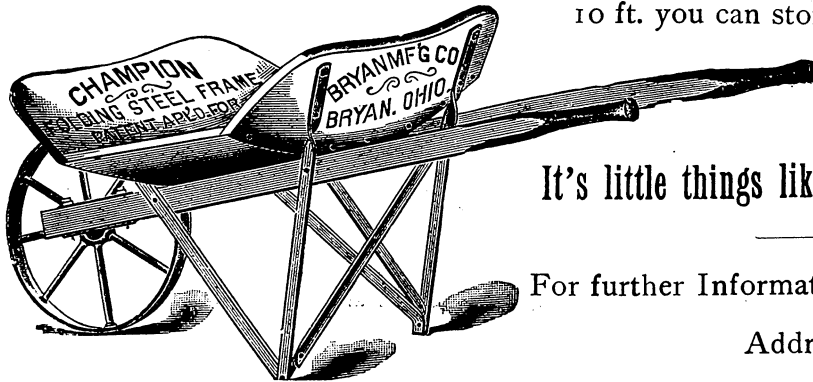
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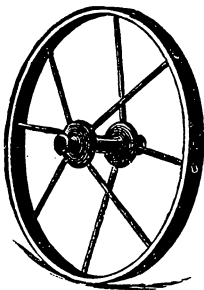
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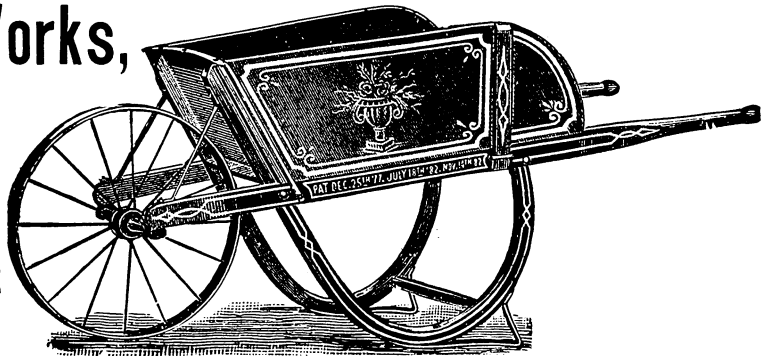
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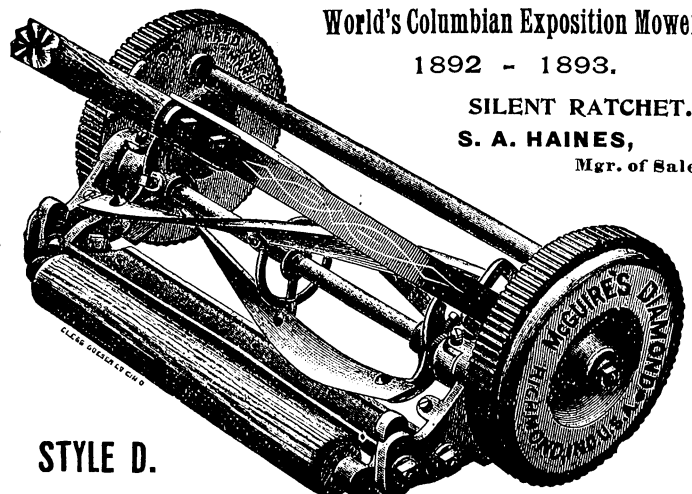
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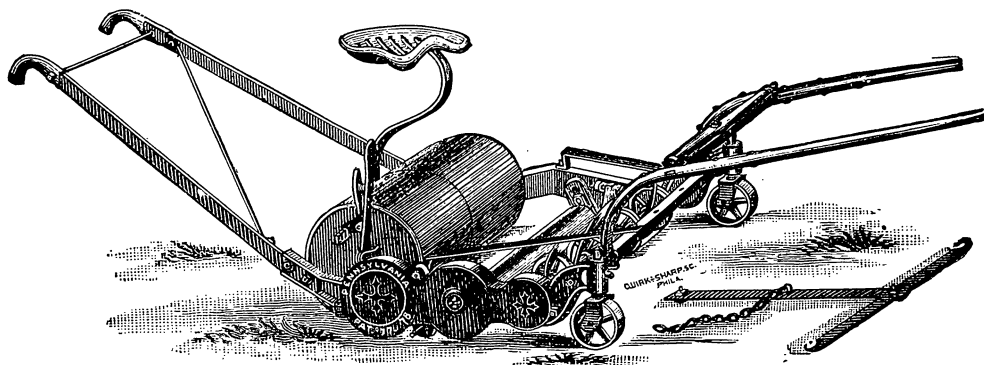
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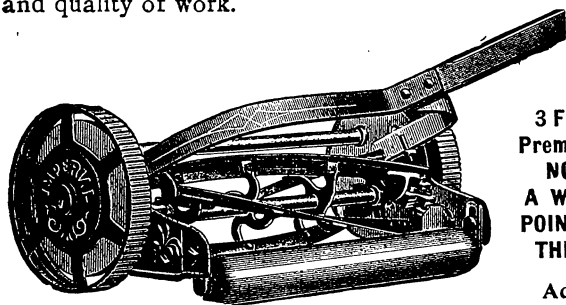
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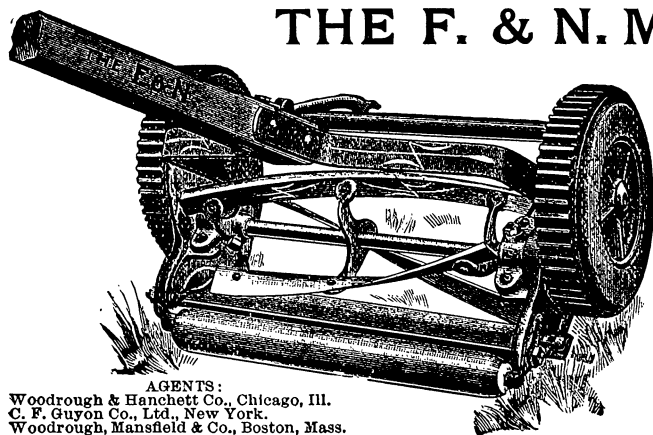
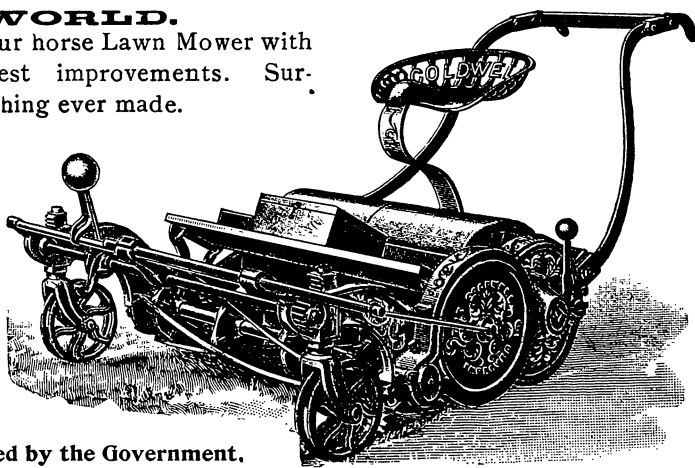
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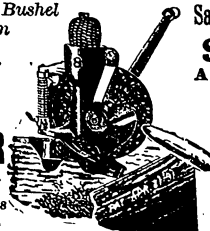
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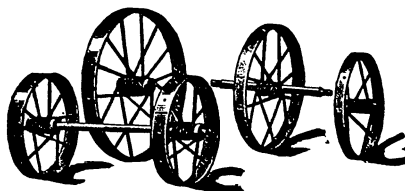
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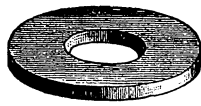
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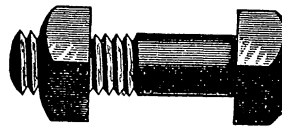
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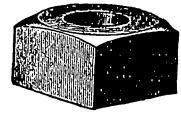
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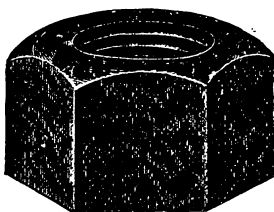
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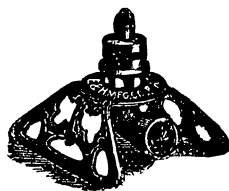
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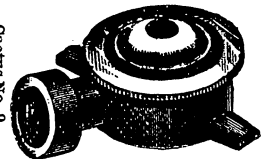
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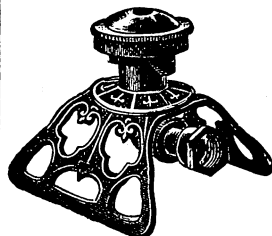
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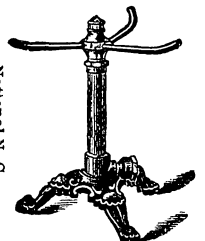


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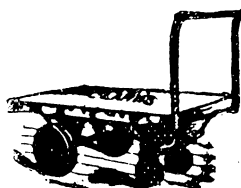
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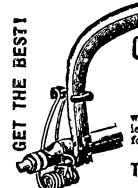
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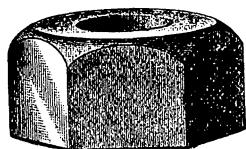
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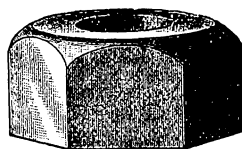
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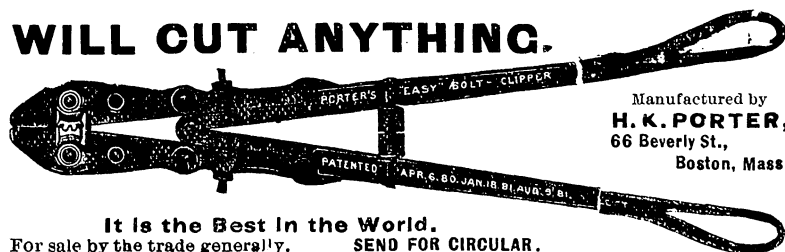
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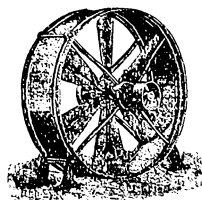
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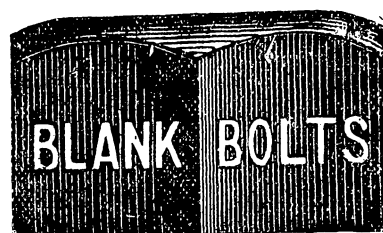
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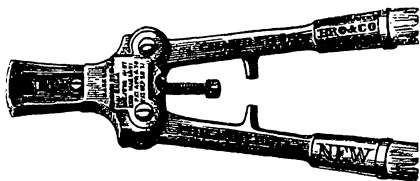
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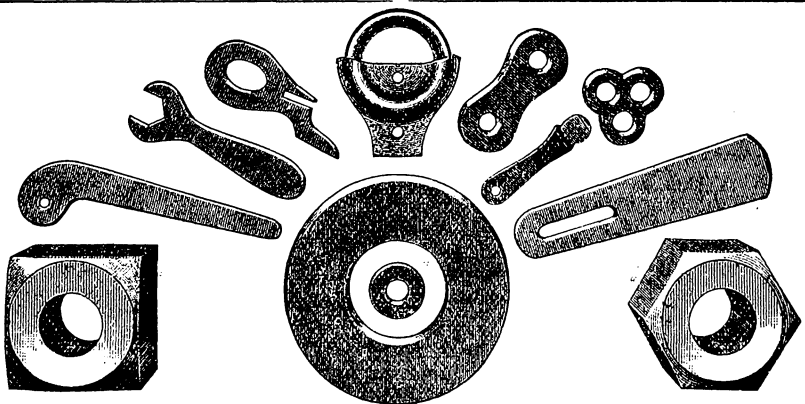
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- Brass Founders.**
Cramp, Wm. & Sons S. & E. B. Co., Philadelphia, Pa.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Fram, E. T., Lancaster, Pa.
Haight & Clark, Albany, N. Y.
Keys, W. W. & R. M. Co., Bridgeport, Conn.
North Bros. Mfg. Co., Phila., Pa.
Reeves, Paul S., Philadelphia.
- Brass Goods.**
Brass Goods Mfg. Co., 88 Chambers.
- Bread and Cake Knives.**
Christy Knife Co., Fremont, O.
Cincinnati Mfg. Co., Cincinnati, O.
Claus Shear Co., Fremont, O.
- Bronze (Tobin).**
Lay, Jos. & Co., Ridgely, Ind.
Rice Mfg. Co., New Durham, N. H.
- Builders' Hardware.**
Deitz, A. E., 97 Chambers St., N. Y.
Reading Hdw. Co., Reading, Pa.
Russell & Erwin Mfg. Co., New York
Yale & Towne Mfg. Co., Stamford, Ct.
- Burr Wheels.**
Torrance Iron Co., Troy, N. Y.
- Butchers' Steels.**
Chattillon, John & Sons, 85-89 Cliff St., N. Y.
Hoffman, C. & A., Philadelphia, Pa.
Nichols Bros., Greenfield, Mass.
- Butcher and Shoe Knives, Manufacturers of.**
Chattillon, John & Sons, 85-89 Cliff St., N. Y.
Goodell Co., Antrim, N. H.
Nichols Bros., Greenfield, Mass.
Wilson, John, Sheffield, England.
- Butts and Hinges.**
Clark Mfg. Co., Buffalo, N. Y.
McKinney Mfg. Co., Allegheny, Pa.
Sabin Machine Co., Montpelier, Vt.
- Stanley Locks, New Britain, Conn.**
Tiebout, W. & J., 16 Chambers, N. Y.
Wrightsville Hdw. Co., Wrightsville, Pa.
- Calf Weaners.**
Carroll Muzzle Co., Carroll, Ia.
- Calipers and Dividers.**
J. Stevens Arms and Tool Co., Chicopee Falls, Mass.
Starrett, L. S., Athol, Mass.
- Car Axles.**
Roberts, A. & P. & Co., Phila.
- Carboy Stands.**
Wolf, W. & L., Philadelphia, Pa.
- Carriage Hardware, Makers of.**
Clapp, E. D. Mfg. Co., Auburn, N. Y.
Covert's Saddlery Works, Farmer, N. Y.
Eccles, Richard, Auburn, N. Y.
Scranton Forging Co., Scranton, Pa.
Smith, H. D. & Co., Plantsville, Conn.
Wilcox & Howe, Birmingham, Conn.
- Cartridge Reloading Tools.**
Ideal Mfg. Co., New Haven, Conn.
- Carvers' Tools.**
White, Van Gland & Co., 15-17 Chatham Square, N. Y.
- Casters, Wheel, &c.**
Clark G. P., Windsor Locks, Conn.
- Castings, Iron and Steel.**
Allentown Hdw. Wks., Allentown, Pa.
Booth, The Lloyd Co., Youngstown, O.
Boston Casting Co., So. Boston, Mass.
The Burr & Houston Co., Brooklyn, N. Y.
Cheney, S. & Son., Manlius, N. Y.
Chester Steel Casting Co., Phila.
Chrome Steel Works, Brooklyn, N. Y.
Eureka Cast Steel Co., Chester, Pa.
Flagg, Stanley G. & Co., Phila.
Garland Foundry Co., Cleveland, O.
Haight & Clark, Albany, N. Y.
King & Andrews Co., Chicago, Ill.
Palmer & De Mooy Fdry. Co., Cleveland, O.
Pratt & Cady Co., Hartford, Conn.
Sessions Foundry Co., Bristol, Conn.
Spencer's I. S. Sons, Guilford, Conn.
Standard Fdy. & Mfg. Co., Cleveland, O.
Taylor & Boggis Fdry Co., Cleveland, Ohio.
Torrance Iron Co., Troy, N. Y.
Union Lock & Hdw. Co., Lancaster, Pa.
Walker Mfg. Co., Cleveland, Ohio.
Wetherill, Robert & Co., Chester, Pa.
- Castings, Malleable.**
Arcade Malleable Iron Co., Worcester, Mass.
Hammer & Co., Branford, Conn.
Torrance Iron Co., Troy, N. Y.
- Catalogue Files.**
Folding Paper Box Co., So. Bend, Ind.
- Chains.**
Bradlee & Co., Philadelphia.
Garland Chain Co., Rankin, Pa.
Link Belt Engineering Co., Phila., Pa.
McKay, Jas. & Co., Pittsburg, Pa.
- Chimneys.**
Phila. Engineering Works, Phila., Pa.
- Chisels, Manufacturers of.**
Buck Bros., Milbury, Mass.
Buck, Chas., Milbury, Mass.
Wheeler, L. & I. J. Co., Buffalo, N. Y.
- Chucks.**
Cushman Chuck Co., Hartford, Conn.
Hogson & Pettis Mfg. Co., New Haven, Conn.
Skinner Chuck Co., New Britain, Conn.
Smith & Egge Mfg. Co., Bridgeport.
Union Mfg. Co., 103 Chambers, N. Y.
Whitlock, Wm., 38 Cortlandt St., N. Y.
Wilton, D. E. Mach. Co., New London, Conn.
- Clamps.**
Hammer & Co., Branford, Conn.
Le Count, C. W., So. Norwalk, Conn.
- Clipping Machines.**
Gillespie Clipping Machine Co., 201 E. 23d Street, N. Y.
- Coal.**
Barns, C. K. & Co., Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.
- Coffee Mills.**
Enterprise Mfg. Co., Phila., Pa.
Parker, Chas. Co., Meriden, Conn.
- Coke.**
Barns, C. K. & Co., Philadelphia, Pa.
Houston, C. B. & Co., Philadelphia, Pa.
Rainey, W. J., Cleveland, O.
Wister, Francis, Philadelphia, Pa.
- Collections.**
Hardware Board of Trade (Limited), 4 and 6 Warren, N. Y.
- Condensers.**
Worthington, Henry R., 86 & 88 Liberty Street, N. Y.
- Conveying Machinery.**
Brown, Hosking & Conveying Machine Co., Cleveland, Ohio.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.
- Copper.**
Ames Sword Co., Chicopee, Mass.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Hendricks Bros., 49 Cliff, N. Y.
New Haven Copper Co., 294 Pearl, N. Y.
Randolph & Clowes, Waterbury, Conn.
Rome Brass & Copper Co., Rome, N. Y.
Wister, Francis, Philadelphia, Pa.
- Cordage.**
Samson Cordage Works, Boston, Mass.
- Cork Screws.**
Williams & C. T. Wire Novelty Co., Newark, N. J.
- Cornice Brakes.**
Bertsch & Co., Cambridge City, Ind.
- Corn Shellers.**
Garry Iron Rfg. Co., Cleveland, O.
- Corrugated Furnaces.**
Continental Iron Wks., Brooklyn, N. Y.
- Corrugated Iron.**
Cincinnati Corrugating Co., Piqua, O.
Jersey City Galvanizing Co., 112 John St., N. Y.
Moseley Iron Bridge & Roof Co., 5 Day, N. Y.
N. Y. Iron Roofing & Corrugating Co., Jersey City, N. J.
- Counting Machines.**
Durant, W. N., Milwaukee, Wis.
- Cranes.**
Maris & Beskley, Philadelphia, Pa.
Ridgway, Craig & Sons, Coatesville, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Whiting Foundry Equipment Co., Chicago, Ill.
Yale & Towne Mfg. Co., Stamford, Conn.
- Cupolas, Hot Blast.**
Whiting Foundry Equipment Co., Chicago, Ill.
- Cutlery, Importers of.**
Sickles, Sweet & Lyon, 35 Barclay, N. Y.
- Cutlery, Manufacturers of.**
Bingham, W. Co., Cleveland, Ohio.
Christy Knife Co., Fremont, O.
Dane, Stoddard & Kendall, Boston, Mass.
Goodell Co., Antrim, N. H.
Nichols Bros., Greenfield, Mass.
Northampton Cutlery Co., Northampton, Mass.
Wilson, John, Sheffield, England.
- Cutlery Display Cases.**
Union Show Case Co., Chicago, Ill.
- Dampers.**
Arcade Mfg. Co., Freeport, Ill.
- Dies.**
Wilson, J. Fred, Worcester, Mass.
- Die Forgings and Castings.**
Bliss, E. W. Co., Brooklyn, N. Y.
- Dish Washers.**
Boigiano Mfg. Co., Baltimore, Md.
- Dog Collars.**
Union Hardware Co., Torrington, Ct.
- Door Checks and Springs.**
Bardsley, J., 149 & 151 Baxter St., N. Y.
- Door Knobs.**
Perry & Whipple Co., New Haven, Ct.
- Door Springs.**
Coiled Wire Belting Co., Jersey City, N. J.
- Drilling Machines.**
Beaman & Smith, Providence, R. I.
Bickford Drill & Tool Co., Cin., Ohio.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Colburn, A. M., New Haven, Conn.
Dallett, Thos. H. & Co., Philadelphia.
D'Amond & Littleale 204 E. 43d St., N. Y.
Dietz, Schumacher & Co., Cincinnati, Ohio.
Dwight Slate Machine Co., Hartford, Conn.
Goddard, Asa, Worcester, Mass.
Halsey, Jas. T., Philadelphia, Pa.
Hamilton Mch. Tool Co., Hamilton, O.
Harrick & Cowell, New Haven, Conn.
Quinn, A. D., Hartford, Conn.
Sellers, Wm. & Co., Inc., Phila., Pa.
Signourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Woodward & Rogers, Hartford, Conn.
- Drop Forgings.**
Billings & Spencer Co., Hartford, Conn.
Boone, W. C. Mfg. Co., Boonton, N. J.
Clapp, E. D. Mfg. Co., Auburn, N. Y.
Eccles, Richard, Auburn, N. Y.
R. I. Tool Co., Providence, R. I.
Scranton Forging Co., Scranton, Pa.
Wilcox & Howe Co., Birmingham, Conn.
Wilnot & Hobbs Mfg. Co., Bridgeport, Conn.
Wyman & Gordon, Worcester, Mass.
- Drop Presses.**
Bliss, E. W. Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Ferracute Mch. Co., Bridgeton, N. J.
Miner & Peck Mfg. Co., New Haven, Conn.
Stiles & Parker Press Co., Brooklyn, N. Y.
Vulcan Iron Works, Chicago, Ill.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.
- Dumb Waiters.**
Hutchinson, F. S. Co., 32 Warren Street, N. Y.
Storm Mfg. Co., Newark, N. J.
- Dynamite.**
New York Powder Co., 62 Liberty St., N. Y.
- Dynamos.**
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Cutter, Wood & Stevens, Boston, Mass.
Hanson & Van Winkle Co., Newark, N. J.
Zucker & Levett & Loeb Co., 10 to 14 Grand St., N. Y.
- Edge Tools, Makers of.**
Amer. Axe & Tool Co., 280 B'way, N. Y.
Buck Bros., Milbury, Mass.
Buck, Chas., Milbury, Mass.
Plumb, Layette R., Philadelphia, Pa.
White, L. & I. J. Co., Buffalo, N. Y.

See Alphabetical Index Pages 115 & 116.

- Egg Beaters.**
North Bros. Mfg. Co., Philadelphia, Pa.
- Electric Bells and Supplies.**
Ostrander, W. R. & Co., 204 Fulton St., New York.
Wollensak, J. F., Chicago, Ill.
- Elevators, Makers of.**
Link-Belt Engineering Co., Phila., Pa.
Morse, Williams & Co., Phila., Pa.
Penna. Elevator Engineering Co., Phila., Pa.
Variety Machine Co., Warsaw, N. Y.
Warner Elevator Mfg. Co., Cincinnati, Ohio.
- Emery and Emery Wheels.**
Cutter, Wood & Stevens, Boston, Mass.
Diamond Mach. Co., Providence, R. I.
N. Y. Belting & Packing Co., Ltd., N. Y.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Sterling Emery Wheel Co., 174 Fulton St., N. Y.
Tanite Co., Stroudsburg, Pa.
- Emery Wheel Dressers.**
Bay State Stamping Co., Worcester, Mass.
- Engineers and Contractors.**
Aiken, Henry, Pittsburgh, Pa.
Herrick, J. A., 284 Pearl St., N. Y.
Kennedy, Julian, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa.
Lean, D. R., Co., Pittsburgh, Pa.
McClure, Amsler & Co., Pittsburgh, Pa.
Pittsburgh Iron & Steel Engineering Co., Pittsburgh, Pa.
Smythe, S. R. Co., Incorporated, Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.
- Engines, Gas and Gasoline.**
Buckeye Mfg. Co., Union City, Ind.
Otto Gas Engine Works, Phila., Pa.
Springfield Gas Engine Co., Springfield, Ohio.
- Engines, Steam, Makers of.**
Allis, E. P. Co., Milwaukee, Wis.
Bass Foundry & Machine Works, Ft. Wayne, Ind.
Chandler & Taylor Co., Indianapolis, Ind.
Harris, Wm. A., Steam Engine Co., Providence, R. I.
Lane & Bodley Co., Cincinnati, Ohio.
Norwalk Iron Works Co., So. Norwalk, Conn.
Phila. Engineering Works, Phila., Pa.
Southward Foundry & Machine Co., Phila., Pa.
Tod, William & Co., Youngstown, O.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.
Westwick, Jno. & Son, Galena, Ill.
Wetherill, Robt. & Co., Chester, Pa.
- Exercise.**
Independent Electric Co., Chicago, Ill.
- Expansion Belts.**
Boone, W. C. Mfg. Co., Boonton, N. J.
Church, Isaac, Toledo, O.
Steward & Romaine Mfg. Co., Phila., Pa.
- Exporters.**
Flint & Co., 68 Broad St., N. Y.
- Faucets, Self-Measuring.**
Lane Bros., Poughkeepsie, N. Y.
- Faucets, Wooden, Makers of.**
John Sommer's Son, Newark, N. J.
- Feed-Water Heaters and Purifiers.**
Davis, I. B. & Son, Hartford, Conn.
Harrison Safety Boiler Works, Phila., Pa.
National Pipe Bending Co., New Haven, Conn.
Taunton Locomotive Mfg. Co., Taunton, Mass.
Webster, Warren & Co., Camden, N. J.
Whitlock Coll Pipe Co., Elmwood, Conn.
- Fence Ratchets.**
Wire Fence Supply Co., Indianapolis, Ind.
- Fencing, Iron and Wire.**
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Chess Bros., Pittsburgh, Pa.
Clinton Wire Cloth Co., Clinton, Mass.
Gilbert & Bennett Mfg. Co., 42 Cliff St., New York.
Kilmer Mfg. Co., Newburgh, N. Y.
McCallip Fence & Wire Wks., Columbus, Ohio.
Wire Fence Supply Co., Indianapolis, Ind.
The Van Dorn Iron Works Co., Cleveland, O.
- Files, Importers of.**
Moss, F. W., 80 John St., N. Y.
- Files and Raps, Manufacturers of.**
Banker & White, Troy, N. Y.
Barnett, G. & H., 41 & 43 Richmond, Phila.
McCartrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.
- Fire Brick, Makers of.**
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Kreischer, B. & Sons foot E. Houston St., N. Y.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Valentine, M. D. & Bro. Co., Woodbridge.
- Fire Doors.**
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
- Fishing Tackle.**
Dane, Stoddard & Kendall, Boston, Mass.
- Flint and Emery Paper.**
Baeder, Adamson & Co., Phila., Pa.
- Flour Sifters.**
Meyers, Fred, J. Mfg. Co., Hamilton, O.
- Fodder Cutters.**
Silver Mfg. Co., Salem, O.
- Forges, Portable, &c.**
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Sturtevant, B. F. Co., Boston, Mass.
- Forgings, Iron and Steel.**
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Steel—Cambria Iron Co., Johnstown, Pa.
Frankford Steel Co., Phila., Pa.
Scranton Forging Co., Scranton, Pa.
U. S. Projectile Co., Brooklyn, N. Y.
- Forks, Hay and Manure.**
Iowa Farming Tool Co., Ft. Madison, Iowa.
Withington & Cooley Mfg. Co., Jackson, Mich.
- Foundry Facings.**
Dixon, Jos., Crucible Co., Jersey City, N. J.
S. Obermayer Co., Cincinnati, O.
Smith's Pattern Works, Akron, Ohio.
- Foundry Riddles.**
Estey, W. S., 65 Fulton, N. Y.
- Foundry Supplies.**
Diamond Clamp & Flask Co., Richmond, Ind.
S. Obermayer Co., Cincinnati, O.
Rice Mfg. Co., New Durham, N. H.
Smith, J. D., Fdy. Supply Co., Cinn., O.
Smith's Pattern Works, Akron, Ohio.
- Friction Clutches.**
Brown, A. & F., 17 Day St., N. Y.
Keystone Clutch & Mch. Wks., Phila., Pa.
Moore & White Co., Philadelphia, Pa.
- Galvanized Material.**
Jersey City Galvanizing Co., 112 John St., N. Y.
- Galvanizing Kettles.**
Sands, Thos., Nashua, N. H.
- Gas Producers.**
Wood, R. D. & Co., Philadelphia, Pa.
- Gas Stoves.**
Bolgiano Mfg. Co., Baltimore, Md.
- Gas & Steam Fitters' Supplies.**
Pancoast, Henry B. & Co., Phila., Pa.
- Gate Hinges.**
Wrightsville Hdw. Co., Wrightsville, Pa.
- Gear Cutters.**
D. E. Whiton Mach. Co., New London, Conn.
- Gears.**
Boston Gear Works, Boston, Mass.
Gleason Tool Co., Rochester, N. Y.
Lincoln Iron Works, Rutland, Vt.
Poele, Robt. & Son Co., Baltimore, Md.
U. S. Projectile Co., Brooklyn, N. Y.
- Glass Boards.**
Lurkin Rule Co., Saginaw, Mich.
- Glass Cutters.**
Monce, S. G., Bristol, Conn.
- Glue.**
Baeder, Adamson & Co., Phila., Pa.
Dodd, A. W. & Co., Gloucester, Mass.
Russia Cement Co., Gloucester, Mass.
- Grass Catchers.**
Supplee Hardware Co., Phila., Pa.
- Grinding and Polishing Machines.**
Cutter, Wood & Stevens, Boston, Mass.
Diamond Mach. Co., Providence, R. I.
Herrick & Cowell, New Haven, Conn.
Norton Emery Wheel Co., Worcester, Mass.
- Grindstone Dressing Machinery.**
Blake & Johnson, Waterbury, Conn.
- Grindstones.**
Cleveland Stove Co., Cleveland, O.
- Gun Implements.**
Bridgeport Gun Implement Co., 313 S. 4th Broadway, N. Y.
Union Hdw. Co., Torrington, Conn.
- Gunpowder, Makers of.**
Lafin & Rand Powder Co., 29 Murray St., N. Y.
- Gymnasium Supplies.**
Independent Electric Co., Chicago, Ill.
- Handles.**
Cleveland Wood Turning Co., Cleveland, O.
Piqua Handle & Mfg. Co., Piqua, Ohio.
- Hangers, Door.**
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Lane Bros., Poughkeepsie, N. Y.
- Hardware Comm'n Merchants.**
Graham, John H. & Co., 111 Chambers St., New York.
Jacobus, W. H., 90 Chambers, N. Y.
- Hardware Drawers.**
Wernicke Co., Minneapolis, Minn.
- Hardware Jobbers.**
White, Van Glahn & Co., 15-17 Chat-ham Square, N. Y.
- Hardware Manufacturers.**
Allentown Hardware Works, Allentown, Pa.
Russell & Erwin Mfg. Co., Chambers St., New York.
Stearns, E. C. & Co., Syracuse, N. Y.
Streeter, N. R. & Co., Groton, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn.
- Hardware Mfrs. Agents.**
Bingham, W. Co., Cleveland, O.
Clarke, Thomas, St. John, N. B.
Graham, John H. & Co., 113 Chambers, Sickles, Sweet & Lyon, 35 Barclay, N. Y.
- Hardware Specialties.**
Acme Shear Co., Bridgeport, Conn.
Burger Bros., Philadelphia, Pa.
Clark Mfg. Co., Buffalo, N. Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Gwinner Mfg. Co., Hamilton, O.
Johnson, S. C., Racine, Wis.
New Britain Hdw. Mfg. Co., New Britain, Conn.
North Bros. Mfg. Co., Philadelphia, Pa.
Ransom Hdw. Co., Burlington, Vt.
Scranton & Co., New Haven, Conn.
Shepard, Sidney & Co., Buffalo, N. Y.
Union Lock & Hdw. Co., Lancaster, Pa.
Wilson, J. Fred., Worcester, Mass.
Wrightsville Hdw. Co., Wrightsville, Pa.
- Harness Snaps.**
Covert Mfg. Co., West Troy, N. Y.
Coverts' Saddlery Wks., Farmer, N. Y.
Fitch, W. & E. T., New Haven, Conn.
- Hay Tools.**
Myers, F. E. & Bro., Ashland, O.
- Hoes.**
Iowa Farming Tool Co., Ft. Madison, Iowa.
Withington & Cooley Mfg. Co., Jackson, Mich.
- Hoisting Machines.**
Box, Alfred & Co., 314 Green, Phila.
Brown Hoisting & Conveying Mch. Co., Cleveland, Ohio.
Byers, Jno. F. Mch. Co., Ravenna, O.
Fulton Iron & Engine Wks., Detroit, Mich.
Harrington, E. Son & Co., Phila.
Lane Bros., Poughkeepsie, N. Y.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.
Lincoln Iron Works, Rutland, Vt.
McCoy, Jos. F. & Co., 26 Warren St.
Maris & Beekley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis.
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Spedel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.
- Hollow Ware.**
Avery Stamping Co., Cleveland, O.
Bronson Supply Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.
- Hollow Ware, Aluminum.**
Wohler Aluminum Co., Chicago, Ill.
- Horse Clippers.**
Gillette Clipping Machine Co., 201 E. 23d st., N. Y.
- Horse Nails, Makers of.**
Capewell Horse Nail Co., Hartford, Conn.
National Horse Nail Co., Vergennes, Vt.
Putnam Nail Co., Neponset, Boston, Mass.
- Horse and Mule Shoes, Makers of.**
Bryden Horse Shoe Co., Catsauqua, Pa.
Burden Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Diamond State Iron Co., Wilmington, Del.
Leonard, J., 446 West St., N. Y.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phoenix Horse Shoe Co., Poughkeepsie, N. Y.
Rhine Island Perkins Horse Shoe Co., Providence.
Shoenberger & Co., Pittsburgh, Pa.
Standard Horse Shoe Co., Boston, Mass.
- Hose.**
N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.
- Hydrants, &c.**
McLean, John, 298 & 298 Monroe, N. Y.
- Hydraulic Forging.**
U. S. Projectile Co., Brooklyn, N. Y.
- Hydraulic Jacks.**
Dugdon, Richard, 24 Columbia, N. Y.
McCoy, Jos. F. Co., 26 Warren St., N. Y.
- Ice Cream Freezers.**
White Mountain Freezer Co., Nashua, N. H.
- Injectors.**
Kryon-Evans Mfg. Co., Philadelphia, Pa.
Levin, Henry & Co., New York.
Sherwood Mfg. Co., Buffalo, N. Y.
- Insurance, Boiler.**
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.
- Iron and Steel, Swedish.**
Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y.
- Iron Commission Brokers.**
Butze, Adolph, St. Louis, Mo.
Corning, Edw. & Co., 29 B'way, N. Y.
Cotton, Barclay W. & Co., Phila.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia, Pa.
Hoffman, J. W. & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
Pilling & Crane, Philadelphia, Pa.
Wister, L. & R. & Co., Phila., Pa.
- Iron Ore.**
Samuel, Frank, Philadelphia, Pa.
- Iron Merchants.**
Barns, C. K. & Co., Philadelphia, Pa.
Borden & Lovell, 70 West, N. Y.
Bussenus & Cumliffe, Philadelphia.
Corning, Edw. & Co., 29 B'way, N. Y.
Cox, Justice, Jr., Philadelphia.
Cotton, Barclay W. & Co., Phila.
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 446 West St., N. Y.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 577 to 583 Greenwich St., N. Y.
- Pierson & Co., 29 Broadway, N. Y.**
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., 66 B'way, N. Y.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.
- Iron, Importers.**
Abbott, Wheelock & Co., N. Y. and Boston.
Lundberg, Gustaf, Boston, Mass.
- Iron, Sheet, Manufacturers of.**
Cambridge Iron & Steel Co., Cambridge, Ohio.
W. Dewees Wood Co., Ltd., McKeesport, Pa.
- Ironwork, Ornamental.**
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
The Van Dorn Iron Works Co., Cleveland, O.
- Keys.**
Wollensak, J. F., Chicago, Ill.
- Knife and Tool Grinders.**
Tracy, A. J. Co., Ltd., 18 Cliff St., N. Y.
- Ladles.**
Whiting Fdy. Equipment Co., Chicago, Ill.
- Lanterns.**
Rochester Lamp Co., 42 Park Place, New York.
Steam Gauge & Lantern Co., Syracuse, N. Y.
- Laths.**
Kupferle, Jno. C., St. Louis, Mo.
- Lathes.**
Beaman & Smith, Providence, R. I.
Dietz, Schumacher & Co., Cincinnati, O.
Draper Machine Tool Co., Worcester, Mass.
Harrington, E. Son & Co., Phila., Pa.
Harrison, Israel H., Jr., & Co., Philadelphia, Pa.
New Haven Mfg. Co., New Haven, Conn.
Sebastian Lathe Co., Cincinnati, O.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Lathing, Expanded Metal.**
Chess Bros., Pittsburgh, Pa.
- Lathing, Wire.**
Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.
- Lawn Mowers.**
Anderson, F. S. & Co., Richmond, Ind.
Blair Mfg. Co., Springfield, Mass.
Chadborn & Coldwell Mfg. Co., Newburgh, N. Y.
Coldwell Lawn Mower Co., Newburgh, N. Y.
Dille & McGuire Mfg. Co., Richmond, Ind.
F. & N. Mfg. Co., Richmond, Ind.
Henley, M. C., Richmond, Ind.
Supplee Hdw. Co., Phila., Pa.
- Lawn Rakes.**
Gibbs Mfg. Co., Canton, Ohio.
Kohler, F. E. & Co., Canton, O.
- Lawn Sprinklers.**
Blair Mfg. Co., Springfield, Mass.
Ette & Henger Mfg. Co., St. Louis, Mo.
McGowan, John H. Co., Cincinnati, O.
- Letters and Figures, Metallic.**
White, A. A. & Co., Providence, R. I.
- Letters, Paper.**
Tablet & Ticket Co., Chicago, Ill.
- Levels.**
Richardson, C. F. & Son, Athol, Mass.
- Locks and Knobs, Manufacturers of.**
Deltz, A. E., 97 Chambers, N. Y.
Reading Hdw. Co., Reading, Pa.
Smith & Egge Mfg. Co., Bridgeport, Conn.
Yale & Towne Mfg. Co., Stamford, Conn.
- Lubricants.**
Dixon, Jos., Crucible Co., Jersey City, N. J.
- Machinery.**
Am. Tool Works, Cleveland, Ohio.
Ayer, H. C. & Gleason Co., Phila., Pa.
Barnes, W. F. & John, Rockford, Ill.
Beaman & Smith, Providence, R. I.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, G. E., 45 Day St., N. Y.
Bignall & Keeler Mfg. Co., St. Louis.
Bliss, E. W. Co., Brooklyn, N. Y.
Briggs, Marvin, 12 Broadway, N. Y.
Bullard Mch. Tool Co., Bridgeport, Conn.
Carlin's Sons, Thos., Allegheny, Pa.
Clapp, Geo. M., agt., 74 Cortlandt, N. Y.
Detrick & Harvey Mch. Co., Baltimore, Md.
Dietz, Schumacher & Co., Cincinnati, Ohio.
Fitchburg Mch. Works, Fitchburg, Mass.
Garvin Mch. Co., Leight & Canal Sts.
Gould & Eberhardt, Newark, N. J.
Hamilton Mch. Tool Co., Hamilton, O.
Harrington, E. Son & Co., Phila., Pa.
Hartford Machine Screw Co., Hartford, Conn.
Hendey Machine Co., Torrington, Ct.
Hill, Clarke & Co., Boston, Mass.
Howard & Morse, 6 Fulton St., N. Y.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield, Vt.
Lodge & Davis Mch. Tool Co., Cincinnati, O.
Lodge & Shipley Mch. Tool Co., Cincinnati, O.
McCabe, J. J., 68 Cortlandt, N. Y.
Machinists' Supply Co., Rochester, N. Y.
Manville, E. J., Mch. Co., Waterbury, Conn.
Newark Mch. Tool Wks., Newark, N. J.
New Haven Mfg. Co., New Haven, Ct.
New York Machinery Depot, 178 Broadway, New York.
Niles Tool Wks., 138 Liberty St., N. Y.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

- Place, Geo.**, 145 Broadway, N. Y.
Poole, Robt. & Son Co., Baltimore, Md.
Powell Planer Co., Worcester, Mass.
Prentiss Tool & Supply Co., N. Y.
Scranton Supply & Mchry. Co., Scranton, Pa.
Selbert, J. M., Philadelphia, Pa.
Sellers, Wm. & Co., Phila.
Seyfert's Sons, L. F., Philadelphia, Pa.
St. John's Tool Co., Hartford, Conn.
Steeple, J. & Co., Cincinnati, O.
Stow Flexible Shaft Co., Ltd., Phila.
Toomey, Frank, Philadelphia, Pa.
Walker Mfg. Co., Cleveland, O.
Wetherill, Robert & Co., Chester, Pa.
Wilson, W. A., Rochester, N. Y.
- Machinery for Hardware Manufacturers.**
Att. Jno. & Son, New Haven, Conn.
- Machine Knives.**
Loring, Coes & Co., Worcester, Mass.
Simonds Mfg. Co., Fitchburg, Mass.
- Machine Screws.**
Rubbell, Harvey, Bridgeport, Ct.
New Britain Hdw. Mfg. Co., New Britain, Conn.
Rhode Island Tool Co., Providence, R.I.
- Machine Tools.—See Machinery.**
- Machine Work.**
Papping, J., 68th St. & 11th Ave., N. Y. City.
- Machinists' Scales.**
Coffin & Leighton, Syracuse, N. Y.
Starrett, L. S., Athol, Mass.
- Machinists' Tools and Supplies.**
King, J. M. & Co., Watford, N. Y.
Sellers, Wm. & Co., Inc., Phila.
- Manufacturing Sites.**
Chicago, Milwaukee & St. Paul R. R., Chicago, Ill.
- Measuring Tapes.**
Lufkin Rule Co., Saginaw, Mich.
- Meat Choppers.**
Enterprise Mfg. Co., Philadelphia, Pa.
- Meat Cutters.**
North Bros. Mfg. Co., Philadelphia, Pa.
- Mechanical Instruction.**
Correspondence School of Mechanics, Scranton, Pa.
- Metals.**
Fearing, Wm. S., 100 Chambers, N. Y.
Hendricks Bros., 49 Cliff, N. Y.
- Metal Brokers.**
American Metal Co., N. Y.
- Metal Saws.**
Q. & C. Co., Chicago, Ill.
- Metallic Ceilings.**
Penn Iron Roofing & Corrugating Co., Phila., Pa.
- Metallurgists.**
Britton, J. Blodgett, Phila., Pa.
- Mining Knives.**
Palmer Hdw. Mfg. Co., Troy, N. Y.
Streeter, N. R. & Co., Groton, N. Y.
- Mine Lamps.**
Darby, Edw. & Sons, Phila., Pa.
Leonard, B. E., Scranton, Pa.
- Mining Screens.**
Harrington & King Perforating Co., Chicago, Ill.
Howard & Morse, 45 Fulton, N. Y.
- Mining Machinery.**
Allis, E. P. Co., Milwaukee, Wis.
- Models, Makers of.**
Franklin, H. H. Mfg. Co., Syracuse, N. Y.
Ideal Machine Works, Hartford, Conn.
- Molding Sand.**
Obermayer, S. Co., Cincinnati, O.
- Motors, Water and Electric.**
Boligiano Mfg. Co., Baltimore, Md.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Dallett, Thomas H. & Co., Phila., Pa.
- Nail Keg Stock.**
Crescent Mfg. Co., Detroit, Mich.
- Nail Machinery.**
Pittsburgh Mfg. Co., Pittsburgh, Pa.
- Nail and Tack Pullers.**
Am. Specialty Co., Hartford, Conn.
Scranton & Co., New Haven, Conn.
- Nails (Cut) and Spikes.**
Borden & Lovell, 70 West, N. Y.
Pottstown Iron Co., Pottstown, Pa.
Riverside Iron Wks., Wheeling, W. Va.
Nickel Platers' Supplies.
Hanson & Van Winkle Co., Newark, N. J.
Zucker & Levett & Loeb Co., 10 to 14 Grand St., N. Y.
- Norway Shapes, Rollers of.**
Rowland, William & Harvey, Frankford, Philadelphia.
- Novelty Manufacturers.**
Franklin, H. H. Mfg., Syracuse, N. Y.
Ideal Machine Works, Hartford, Conn.
- Nut Machines.**
Dunham Nut Co., Unionville, Ct.
- Nuts, Bolts, & Co., Makers of.**
American Bolt Co., Lowell, Mass.
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Dunham Nut Co., Unionville, Conn.
Haskell, Wm. H. Co., Pawtucket, R. I.
Mt. Carmel Bolt Co., Mt. Carmel, Conn.
Pennsylvania Bolt & Nut Co., Lebanon, Pa.
Port Chester Bolt & Nut Co., Port Chester, N. Y.
Rhode Island Tool Co., Providence, R. I.
Russell, Burdall & Ward, Port Chester, N. Y.
Sternbergh, J. H. & Son, Reading, Pa.
Wilson, J. Fred., Worcester, Mass.
Wm. H. Haskell Co., Pawtucket, R. I.
- Oil Cups and Lubricators.**
Sherwood Mfg. Co., Buffalo, N. Y.
- Oilers.**
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Oilless Anti-Friction Metals.**
North American Metalline Co., Long Island City, N. Y.
- Oil Stones.**
Pike Mfg. Co., Pike Station, N. H.
- Ores.**
Wister, Francis, Philadelphia, Pa.
- Ox Shoes.**
Millers Falls Co., 93 Reade St., N. Y.
Scranton Forging Co., Scranton, Pa.
- Packing.**
Morrison, Robert, St. Louis, Mo.
N. Y. Belting & Packing Co., Ltd., N. Y.
- Padlocks.**
Ames Sword Co., Chicopee, Mass.
Fraim, E. T., Lancaster, Pa.
Union Lock & Hdw. Co., Lancaster, Pa.
Wolf, W. & L., Phila., Pa.
- Pills.**
Richmond Cedar Wks., Richmond, Va.
- Paint Burners.**
Dangler Stove & Mfg. Co., Cleveland, Ohio.
- Paint Cans.**
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Paints Stretcher.**
Covert Mfg. Co., West Troy, N. Y.
- Patent Solicitors.**
Butler, C. N., Phila., Pa.
Jenner, H. W. T., Washington, D. C.
Howson & Howson, Philadelphia and Washington.
Stocking, E. B., Washington, D. C.
- Pattern Letters.**
Wells, Heber, 157 William St., N. Y.
- Perforated Metal.**
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co., Chicago, Ill.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.
- Phosphor Bronze.**
Phosphor Bronze Smelting Co., Limited, Philadelphia.
- Phosphor Tin.**
Crescent Phosphorized Metal Co., Philadelphia, Pa.
Halk & Naumann, 516 Pearl, N. Y.
- Picks and Mattocks.**
Plumb, Fayette R., Philadelphia, Pa.
- Pig Iron.**
Houston, C. B. & Co., Philadelphia, Pa.
Montour Iron & Steel Co., Danville, Pa.
Naylor & Co., 45 Wall, N. Y.
Pilling & Crane, Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.
- Pig Iron Storage.**
Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.
- Pile Drivers.**
Vulcan Iron Works, Chicago, Ill.
- Pipe, Bent.**
National Pipe Bending Co., New Haven, Conn.
- Pipe Cutting and Threading Machines.**
Armstrong Mfg. Co., Bridgeport, Conn.
Bigmal & Keeler Mfg. Co., St. Louis, Mo.
Detrick & Harvey Mch. Co., Baltimore, Md.
Merrill Mfg. Co., Toledo, O.
Pancoat, Henry B. & Co., Phila.
Saunders Sons, D., Yonkers, N. Y.
Walworth Mfg. Co., Boston, Mass.
- Pipe Grips.**
Prentiss Vise Co., 44 Barclay, N. Y.
- Pipes, Fittings, & Co., Makers of.**
McNab & Harlin Mfg. Co., N. Y.
- Pipe, Water and Gas, Makers of.**
Donaldson Iron Co., Emsa, Pa.
Riverside Iron Works, Wheeling, W. Va.
Wood, R. D. & Co., Philadelphia, Pa.
- Plane Irons, Manufacturers of.**
Buck Bros., Millbury, Mass.
Buck, Chas., Millbury, Mass.
- Planers.**
Detrick & Harvey Mch. Co., Baltimore, Md.
New Haven Mfg. Co., New Haven, Conn.
Powell Planer Co., Worcester, Mass.
Wilson, W. A., Worcester, Mass.
- Planes, Manufacturers of.**
Stanley Rule & Level Co., N. Y.
- Plated Ware.**
Boardman, L. & Son, New Haddam, Ct.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, Wm. Mfg. Co., Hartford, Ct.
- Plate, Iron and Steel, Mfrs. of.**
Atna-Standard Iron & Steel Co., Bridgeport, O.
Lukens Iron & Steel Co., Coatesville, Pa.
Mahoning Valley Iron Co., Youngstown, Ohio.
Moorhead-McLean Co., Pittsburgh, Pa.
McIlvain & Sons, Reading, Pa.
Pottstown Iron Co., Pottstown, Pa.
Pottsville Iron & Steel Co., Pottsville, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Wood, Alan Co., Philadelphia.
- Plating, Nickel, Brass and Silver.**
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Polishing Machines.**
Watson & Stillman, 204 E. 43d, N. Y.
- Post Hole Diggers.**
Gibbs Mfg. Co., Canton, Ohio.
Kohler, F. E. & Co., Canton, O.
- Poultry Nettings.**
Barnum, E. T., Detroit, Mich.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
"Silver Finish."
Tyler Wire Works Co., W. S., Cleveland, O.
Wright & Colton Wire Cloth Co., Worcester, Mass.
- Powder.**
Lafin & Rand Powder Co., 29 Murray, New York Powder Co., 62 Liberty St., N. Y.
- Power Hammers.**
Dienelt & Eisenhardt, Philadelphia.
Dupont Mfg. Co., St. Johnsbury, Vt.
Jenkins & Lingle, Bellefonte, Pa.
Long & Allstatter Co., Hamilton, Ohio.
Miner & Peck Mfg. Co., New Haven, Conn.
Scranton & Co., New Haven, Conn.
- Power Transmitting Machinery.**
Dodge Mfg. Co., Mishawaka, Ind.
- Presses, Dies, & Co.**
E. W. Bliss Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Ferracute Mch. Co., Bridgeport, N. J.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Mch. Co., Waterbury, Ct.
- Presses, Power, Makers of.**
Bliss, E. W. Co., Brooklyn, N. Y.
Manville E. J. Mch. Co., Waterbury, Ct.
Merriman, A. H., Meriden, Conn.
Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.
- Pressure Regulators.**
Newark Regulator Co., Newark, O.
- Printing and Embossing.**
Griffith, Axtell & Cady Co., Holyoke, Mass.
- Pruners.**
Henry, J. T. Mfg. Co., Hamden, Conn.
Toplift & Ely Co., Elyria, Ohio.
- Pulleys.**
Brown, A. & F., 17 Dey St., N. Y.
Dodge Mfg. Co., Mishawaka, Ind.
Keystone Clutch Mch. Wks., Phila., Pa.
Reading Wood Pulley Co., Reading, Pa.
Reeves Pulley Co., Columbus, Ind.
- Pumping Machinery.**
Dean Bros. Steam Pump Works, Indianapolis, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.
Hucker-Corville Steam Pump Co., St. Louis, Mo.
Lucas, C. O. & Co., Greenville, Ohio.
McGowan, J. H. & Co., Cincinnati, O.
Maslin, J. & Son, Jersey City, N. J.
Norwalk Iron Works Co., So. Norwalk, Conn.
Southwark Fdy. & Mch. Co., Phila., Pa.
Valley Pump Works, Easthampton, Mass.
Worthington, Henry R., 86 and 88 Liberty St., N. Y.
- Pumps, Makers of.**
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Goulds Mfg. Co., Seneca Falls, N. Y.
Miller, C. & Sons, Utica, N. Y.
Myers, F. E. & Bro., Ashland, O.
Peters Pump Co., Kewanee, Ill.
Red Jacket Mfg. Co., Davenport, Iowa.
- Punches.**
Richards, I. P., Providence, R. I.
- Punches and Shears, Hand and Power.**
Bertsch & Co., Cambridge City, Ind.
E. W. Bliss Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Ferracute Mch. Co., Bridgeport, N. J.
Long & Allstatter Co., Hamilton, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.
Wals & Roos Punch & Shear Co., Cincinnati, Ohio.
Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.
Watson & Stillman, 204 E. 43d, N. Y.
- Rails, Old and New.**
Perry, W. H. & Co., Providence, R. I.
- Rat and Mouse Traps.**
Burditt & Williams, Boston, Mass.
Estey, W. S., 65 Fulton, N. Y.
Excelsior Cutlery Co., Worcester, Mass.
- Razors, Manufacturers of.**
Millbury Razor Co., Millbury, Mass.
Satish Razor Co., Worcester, Mass.
- Reducing Valves.**
D'Este & Seeley Co., Boston, Mass.
- Reels.**
Hendryx, A. B. Co., New Haven, Conn.
- Refrigerator Door Fasteners.**
Conroy, F. J. & Co., Philadelphia.
- Rivers.**
Blake & Johnson, Waterbury, Conn.
Burden Iron Co., Troy, N. Y.
Clark & Cowles, Plainville, Conn.
Cobb & Drew, Plymouth, Mass.
New England Screw Co., Boston, Mass.
Sternbergh, J. H. & Son, Reading, Pa.
Townsend, W. P. & Co., New Brighton, Pa.
- Riveting Machines.**
Att. Jno. & Son, New Haven, Conn.
- Rolling Mill Machinery.**
Birmingham Iron Fdry, Birmingham, Conn.
Booth, The Lloyd Co., Youngstown, O.
Lechburg Foundry & Mch. Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Robinson-Rea Mfg. Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
Trethewey Mfg. Co., Pittsburgh, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
- Roll Paper Holders.**
Am. Roll Paper Co., St. Louis, Mo.
- Rolls, Chilled, Sand and Steel.**
Birmingham Iron Foundry, Birmingham, Conn.
Booth, The Lloyd Co., Youngstown, O.
East Chicago Fdry Co., Chicago, Ill.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Robinson-Rea Mfg. Co., Pittsburgh, Pa.
Seaman, Sleeth & Black, Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
- Roofing.**
Cincinnati Corrugating Co., Piqua, O.
N. Y. Iron Roofing & Corrugating Co., Jersey City, N. J.
- Rope and Web Goods.**
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y.
- Rope Wheels.**
Cresson, Geo. V. Co., Philadelphia, Pa.
- Rubber Goods.**
Canfield, H. O., Bridgeport, Conn.
- Rules, Manufacturers of.**
Stanley Rule & Level Co., 29 Chambers.
- Sad Irons.**
Enterprise Mfg. Co., Phila., Pa.
Streeter, N. R. & Co., Groton, N. Y.
- Sad Irons, Gas.**
Boligiano Mfg. Co., Baltimore, Md.
- Sample Holder.**
Massey & Thompson, Monroe City, Mo.
- Sand Paper.**
Baeder, Adamson & Co., Phila., Pa.
- Sash Balances.**
Caldwell Mfg. Co., Rochester, N. Y.
Pullman Sash Balance Co., Rochester, N. Y.
- Sash Cords and Chains.**
Morton, Thos., 66 Elizabeth, N. Y.
Samson Cordage Works, Boston, Mass.
Smith & Egge Mfg. Co., Bridgeport.
- Sash Fasteners.**
Wooster, F. V., Boston, Mass.
- Sash Locks.**
Champion Safety Lock Co., Cleveland, Ohio.
Ives, H. B. & Co., New Haven, Conn.
- Sash Pulleys.**
Palmer Hardware Mfg. Co., Troy, N. Y.
- Sash Weights.**
Brown, E. E. & Co., Philadelphia, Pa.
Kings County Iron Foundry, Brooklyn, N. Y.
Norton Bros., Chicago, Ill.
- Saw Filing Machines.**
Disston, Henry & Sons, Philadelphia, Pa.
- Saws, Makers of.**
Atkins, E. C. & Co., Indianapolis, Ind.
Butler Mfg. Co., Boston, Mass.
Disston, Henry & Sons, Phila., Pa.
National Saw Co., Newark, N. J.
Simonds Mfg. Co., Fitchburg, Mass.
- Saw Sets.**
Taintor Mfg. Co., 84-86 Chambers, N. Y.
- Saw Vises.**
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Sawing Machines.**
Q. & C. Co., Chicago, Ill.
- Scales, Manufacturers of.**
Buffalo Scale Co., Buffalo, N. Y.
Chattillon, John & Sons, 85-89 Cliff, N. Y.
- Scrapers, Road.**
Sidney Steel Scraper Co., Sidney, O.
- Screens, Coal and Ore.**
Hendrick Mfg. Co., Ltd., Carbondale, Pa.
- Screens, Window and Door.**
Phillips, A. J. Co., Fenton, Mich.
- Screw Cutting Machinery.**
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Screw Drivers.**
Brown, R. H. & Co., New Haven, Conn.
Gay & Parsons, Mayhew, H. H. Co., Shelburne Falls, Mass.
- Screw Machinery.**
Hartford Machine Screw Co., Hartford, Conn.
- Screw Plate and Pipe Cutter.**
Jarecki Mfg. Co., Erie, Pa.
- Screws, Makers of.**
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Wm. H. Haskell Co., Pawtucket.
Miles, F. S., 205 Quarry, Philadelphia.
New England Screw Co., Boston, Mass.
Reynolds & Co., New Haven, Conn.
Worcester Machine Screw Co., Worcester, Mass.
- Scroll Saws.**
Barnes, W. F. & John, Rockford, Ill.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Scythe Stones and Whetstones.**
Pike Mfg. Co., Pike Station, N. H.
Cleveland Stone Co., Cleveland, O.
- Sewer Pipes.**
Sharon Clay Mfg. Co., Sharon, Pa.
- Shade Hangers.**
South, W. A. Co., Salem, Mass.
- Shafting, Makers of.**
Brown, A. & F., 17 Dey St., N. Y.
Cresson, Geo. V. Co., Philadelphia, Pa.
Fairmount Mch. Co., Philadelphia, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.
- Shaft Support.**
Decatur Shaft Support Co., Decatur, Ill.
- Shaped Iron and Steel, Manufacturers of.**
Atna-Standard Iron & Steel Co., Bridgeport, O.
East Chicago Fdry Co., Chicago, Ill.

- Allentown Rolling Mill**, Allentown, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Passaic Rolling Mill Co., Paterson, N.J.
The Phoenix Iron Co., Phila., Pa.
Pottsville Iron & Steel Co., Pottsville, Pa.
Roberts, A. & P. & Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.
- Shears and Scissors.**
Acme Shear Co., Bridgeport, Conn.
Clauss Shear Co., Fremont, Ohio.
Helmischs, R. Sons Co., Newark, N. J.
- Sheet Iron and Steel, Manufacturers of.**
Etna-Standard Iron and Steel Co., Bridgeport, O.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Jersey City Galvanizing Co., 112 John St., N. Y.
Mahoning Valley Iron Co., Livingston, Ohio.
Morehead-McCleane Co., Pittsburgh.
Pierson & Co., 29 Broadway, N. Y.
Singer, Nimick & Co., Ltd., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.
- Sheet Zinc.**
Mathiessen & Hegeler Zinc Co., La Salle, Ill.
- Shell Brackets.**
Atlas Mfg. Co., New Haven, Conn.
Stanley Works, New Britain, Conn.
- Shoe Stands.**
Kupferle, Jno. C., St. Louis, Mo.
- Show Cases.**
Union Show Case Co., Chicago, Ill.
- Sinks.**
Douglas, W. & B., Middletown, Conn.
- Skate Grinding Machinery.**
Perkins, Chas., Bridgewater, Mass.
- Skates, Ice.**
Barney & Berry, Springfield, Mass.
Dame, Stoddard & Kendall, Boston, Mass.
Graham, John H. & Co., 113 Chambers Street, N. Y.
Keene Mfg. Co., Keene, N. H.
Winslow, Sam'l., Skate Mfg. Co., Worcester, Mass.
- Skates, Roller.**
Henley, M. C., Richmond, Ind.
Union Hardware Co., Torrington, Ct.
Winslow, Sam'l., Skate Mfg. Co., Worcester, Mass.
- Slag Machines.**
Cambria Iron Co., Johnstown, Pa.
- Slaw Cutters.**
Tucker & Dorsey Mfg. Co., Indianapolis, Ind.
- Smelting Works.**
Reeves, Paul S., 760 S. Broad, Phila.
- Snow Shovels.**
Phillips, A. J. Co., Fenton, Mich.
- Soldering Coppers.**
Clendenin Bros., Baltimore, Md.
Covert Mfg. Co., West Troy, N. Y.
- Soldering Furnaces.**
Burgess Soldering Furnace Co., Columbus, Ohio.
- Soldering Salts.**
Shepard, Sidney & Co., Buffalo, N. Y.
- Speaking Tubes.**
Ostrander, W. R. & Co., 204 Fulton St., N. Y.
Wollensak, J. F., Chicago, Ill.
- Special Machinery.**
Rhodes, L. E. Co., Hartford, Conn.
- Spelter.**
Mathiessen & Hegeler Zinc Co., La Salle, Ill.
- Spoons and Forks.**
Boardman, L. & Son, New Haddam, Conn.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, The Wm. Mfg. Co., Hartford, Conn.
- Sporting Goods.**
Hartley & Graham, 312-315 E'way, N.Y.
Schoverling, Daly & Gales, 302 Broadway, N. Y.
- Springes.**
Clark & Cowles, Plainville, Ct.
Colled Wire Belting Co., Jersey City, N. J.
Dunbar Bros., Bristol, Conn.
Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Reiland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt.
Tuck Mfg. Co., Brockton, Mass.
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
- Spring Hinges.**
Bommer Bros., Brooklyn, N. Y.
Fullman Sash Balance Co., Rochester, N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Hdw. Co., 14 Warren St., N. Y.
- Stamping Works.**
Avery Stamping Co., Cleveland, O.
Cleveland Stamping & Tool Co., Cleveland, O.
- Staples.**
Cobb & Drew, Plymouth, Mass.
Titchener, E. H. & Co., Binghamton, N. Y.
- Steam Gauges.**
Bristol Co., Waterbury, Conn.
Star Brass Mfg. Co., Boston, Mass.
- Steam Hammers, &c., Makers of.**
Denelt & Eisenhart, Philadelphia.
Dudgeon, Richard, 24 Columbia Street, N. Y.
Trethewey Mfg. Co., Pittsburgh, Pa.
- Steam Heating & Oil Separators.**
Webster, Warren & Co., Camden, N. J.
- Steam Separators.**
Harrison Safety Boiler Wks., Phila., Pa.
Webster, Warren & Co., Camden, N. J.
- Steam Specialties.**
D'Este & Seeley Co., Boston, Mass.
Lunkenhelmer Co., Cincinnati, O.
Newark Regulator Co., Newark, O.
- Steam Traps.**
D'Este & Seeley Co., Boston, Mass.
- Steel, Cold Rolled Strip.**
Superior Steel Co., Pittsburgh, Pa.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Steel Figures and Alphabet.**
Hoedg, C. W., 52 Fulton St., N. Y.
Krogerud, W., 61 Fulton St., N. Y.
- Steel Importers.**
Abbott, Wheelock & Co., N. Y. and Boston.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 41 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 83 John, N. Y.
Wetherell Bros., 93 Liberty St., N. Y.
Whitney, A. R. & Co., Broadway, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.
- Steel (Mushet's Special).**
Jones, B. M. & Co., Boston.
- Steel Manufacturers.**
Etna-Standard Iron & Steel Co., Bridgeport, O.
Bethlehem Iron Co., S. Bethlehem, Pa.
Baker, Hermann & Co., 103 Duane St.
Carbon Steel Co., Pittsburgh, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Frankford Steel Co., Philadelphia.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 41 John, N. Y.
Kayser, Ellison & Co., Sheffield, Eng.
La Belle Steel Co., Coatesville, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Moorhead-McCleane Co., Pittsburgh, Pa.
Moss, F. W., 83 John, N. Y.
Pottsville Iron and Steel Co., Pottsville, Pa.
Bowland, Wm. & Harvey, Frankford, Philadelphia.
Singer, Nimick & Co., Pittsburgh, Pa.
Superior Steel Co., Pittsburgh, Pa.
Wordlaw, S. C., Sheffield, Eng.
Wetherell Bros., 93 Liberty, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Steel, Manufacturers' Agents.**
Barns, C. K. & Co., Philadelphia, Pa.
Butze, Adolph, St. Louis, Mo.
Cumming, Edw. & Co., 29 E'way, N. Y.
Lindsay, Jas. G. & Co., Phila., Pa.
Pierson & Co., 29 Broadway, N. Y.
- Steel Rails, Manufacturers of.**
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Iron Co., Johnstown, Pa.
Montour Iron & Steel Co., Danville, Va.
Riverside Iron Wks., Wheeling, W. Va.
- Steel, Tool.**
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, or 41 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.
- Step Ladders, Rolling.**
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Croissant, M., Albany, N. Y.
- Stocks and Dies.**
Armstrong Mfg. Co., Bridgeport, Conn.
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Oster Mfg. Co., Cleveland, O.
Saunders' Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Stone Saws and Planers.**
Lincoln Iron Works, Rutland, Vt.
- Store Fixtures.**
Wernicke Co., Minneapolis, Minn.
- Stove Linings.**
Ostrander Fire Brick Co., Troy, N. Y.
- Stove Pipe Thimbles.**
Cheney, S. & Son, Manlius, N. Y.
- Stove Trucks.**
Gwinner Mfg. Co., Hamilton, Ohio.
Randall & Ward, Le Roy, N. Y.
Tucker & Dorsey Mfg. Co., Indianapolis, Ind.
- Stoves, Gasoline.**
Standard Lighting Co., Cleveland, O.
- Street Lamps.**
Rochester Lamp Co., 42 Park Place, New York.
Steam Gauge & Lantern Co., Syracuse, N. Y.
- Structural Iron Work.**
Lindsay, Jas. G. & Co., Phila., Pa.
- Structural Tubing.**
National Structural Tubing Co., Potter Bldg., N. Y.
- Sulphuric Acid.**
Mathiessen & Hegeler Zinc Co., La Salle, Ill.
- Tacks, Brads, Staples, &c.**
Atlas Tack Corporation, Boston, Mass.
Chess Bros., Pittsburgh, Pa.
Clendenin Bros., Baltimore, Md.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Shelton Co., Birmingham, Conn.
- Tack and Nail Machinery.**
Sweetser, W. A., Brockton, Mass.
- Taps and Dies.**
Butterfield & Co., Derby Line, Vt.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Manning, Maxwell & Moore, 111 Liberty St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Testing Laboratories.**
Riehle Bros. Testing Mach. Co., Philadelphia.
- Testing Machines.**
Riehle Bros. Testing Mach. Co., Phila.
- Theoretical Hardware.**
Wollensak, J. F., Chicago, Ill.
- Thill Springs.**
Frost Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.
- Thrust Collars.**
Gouverneur Mach. Co., Gouverneur, N. Y.
- Time Record.**
Scattergood, H. W., Phila., Pa.
- Tin Plate Machinery.**
Lloyd Booth Co., Youngstown, Ohio.
Phillips, F. R., Philadelphia, Pa.
- Tire Upsetters.**
Butts & Ordway, Boston, Mass.
- Toe Calks, Steel.**
Burke, P. F., Boston, Mass.
- Tool Chests.**
Am. Tool Co., 200 W. Houston St., N. Y.
- Tool Holders.**
Armstrong Bros. Tool Co., Chicago, Ill.
- Tools.**
Brown, R. H. & Co., New Haven, Conn.
Bray, Jno. S. & Co., Bridgeport, Conn.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 93 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers, Starrett, L. S., Athol, Mass.
Stearns, E. C. & Co., Syracuse, N. Y.
Stevens, J. Arms & Tool Co., Chicopee Falls, Mass.
Tower & Lyon, 36 Chambers St., N. Y.
- Tools, Blacksmith and Wheelwright.**
Buffalo Forge Co., Buffalo, N. Y.
Butts & Ordway, Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Oster Mfg. Co., Cleveland, Ohio.
Plumb, Everett & Co., Philadelphia, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Tools, Steam and Gas Fitters'.**
Saunders' Sons, D., Yonkers, N. Y.
- Torches, Oil and Gasoline.**
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Schneider & Trenkamp Co., Cleveland, Ohio.
Standard Lighting Co., Cleveland, O.
- Transom Litters.**
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- Tree Holders.**
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- Trucks, Manufacturers of.**
Clark, G. F., Windsor Locks, Conn.
- Tubes, Seamless Drawn Copper.**
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Randolph & Clowes, Waterbury, Conn.
- Tubes, Steel.**
Avery Stamping Co., Cleveland, O.
Lang's, John S. Son & Co., 4 Fletcher St., New York.
Shelby Steel Tube Co., Shelby, Ohio.
U. S. Projectile Co., Brooklyn, N. Y.
- Tubing Structural.**
National Structural Tubing Co., Potter Bldg., N. Y.
- Turnbuckles.**
Central Iron & Steel Co., Brazil, Ind.
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.
- Twist Drills, Makers of.**
Cleveland Twist Drill Co., Cleveland, Ohio.
Morse Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland.
- Valves, Gas, Water and Steam.**
Chapman Valve Mfg. Co., Boston.
Clynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., 71 John, N. Y.
Lunkenhelmer Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 66 John, N. Y.
- Ventilating Fans.**
Huyett & Smith Mfg. Co., Detroit, Mich.
Perkins, B. F. & Son, Holyoke, Mass.
- Ventilator Appliances.**
Howard & Morse, 46 Fulton St., N. Y.
- Vise Jaws.**
Newark Mch. Tool Co., Newark, N. J.
- Vises.**
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y.
Millers Falls Co., 93 Reade St., N. Y.
Parker, Chas. Co., Meriden, Conn.
Prentiss Vise Co., 44 Barclay, N. Y.
Tower & Lyon, 95 Chambers St., N. Y.
- Wagon Jacks.**
Coyne Mfg. Co., West Troy, N. Y.
Covert's Saddle Works, Farmer, N. Y.
- Washboards.**
Olds Wagon Wks., Ft. Wayne, Ind.
- Washers.**
Boswell, M. H. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Sternberg, J. H. & Son, Reading, Pa.
- Washing Machines.**
Olds Wagon Works, Ft. Wayne, Ind.
Richmond Cedar Wks., Richmond, Va.
- Water Meters.**
Worthington, Henry R., 86 & 88 Liberty St., N. Y.
- Water Wheels.**
Pool, Robt. & Son Co., Balimore, Md.
- Wheels.**
Arnold Metal Wheel Co., New London, Ohio.
- Wheelbarrows.**
American Wire Co., Cleveland, Ohio.
Bryan Mfg. Co., Bryan, Ohio.
Sidney Steel Scrap Co., Sidney, O.
Toledo Wheelbarrow Wks., Toledo, O.
Withington & Cooley Mfg. Co., Jackson, Mich.
- Window Cord, Makers of.**
Samson Cordage Works, Boston, Mass.
- Wire, Manufacturers of.**
Cincinnati Barb Wire Fence Co., Cincinnati, O.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
New Haven Wire Mfg. Co., New Haven, Conn.
Prentiss, Geo. W. & Co., Holyoke, Mass.
Salem Wire Nail Co., Salem, O.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester.
Wetherell Bros., 93 Liberty St., N. Y.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
- Wire Cloth.**
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Estey, W. S., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff.
Howard & Morse, 46 Fulton, N. Y.
Ludlow-Saylor Wire Co., St. Louis, Mo.
N. J. Wire Cloth Co., Trenton, N. J.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
W. S. Tyler Wire Works Co., Cleve'd.
- Wire Cutters.**
King, J. M. & Co., Watertown, N. Y.
- Wire Dies.**
McFarland, Wm., Trenton, N. J.
Newton & Shipman, 83 John St., N. Y.
- Wire Fences, See Fencing, Iron and Wire.**
- Wire Goods, Manufacturers of.**
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
Ludlow-Saylor Wire Co., St. Louis.
Meyers, Fred J. Mfg. Co., Hamilton, O.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Williamson, C. T., Wire Novelty Co., Newark, N. J.
Wire Goods Co., Worcester, Mass.
- Wire Machinery.**
Am. Tool Wks., Cleveland, O.
Manville, E. J. Mch. Co., Waterbury, Ct.
Morgan Construction Co., Worcester, Mass.
Waterbury Mch. Co., Waterbury, Conn.
- Wire Straightening and Cutting Machinery.**
Adt, John & Son, New Haven, Conn.
- Wire Nails.**
Bond Nail Co., Raynham, Mass.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
Salem Wire Nail Co., Salem, O.
Taunton Wire Nail Co., Taunton, Mass.
Whitney, A. R. & Co., New York City.
- Wire Rods, Steel.**
American Wire Co., Cleveland, Ohio.
New Castle Wire Nail Co., New Castle, Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Whitney, A. R. & Co., 17 E'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.
- Wire Rope, Iron and Steel, Makers.**
Broderick & Bascom Rope Co., St. Louis, Mo.
California Wire Works, San Francisco.
Hazard Mfg. Co., Wilkesbarre, Pa.
A. Leachen & Sons Rope Co., St. Louis.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester, Mass.
- Wire Rope Machinery.**
Kay, J. F., Passaic, N. J.
- Wire, Spool.**
Malin & Co., Cleveland, O.
- Wood Turning.**
Cleveland Wood Turning Co., Cleveland, O.
- Wood-Working Machinery.**
Egan Co., Cincinnati, Ohio.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Wrenches, Manufacturers.**
Bemis & Call Hardware & Tool Co., Springfield, Mass.
Billings, Spencer & Co., Hartford, Conn.
Cox Wrench Co., Worcester, Mass.
Tower & Lyon, 95 Chambers St., N. Y.
Trimont Mfg. Co., Roxbury, Pa.
Walworth Mfg. Co., Boston, Mass.
- Wringers.**
Colby Wringer Co., Montpelier.
Peerless Mfg. Co., Cleveland, Ohio.
- Yacht Hardware.**
Ferdinand, L. W., & Co., Boston, Mass.

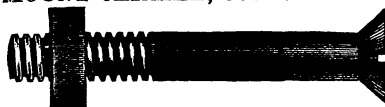
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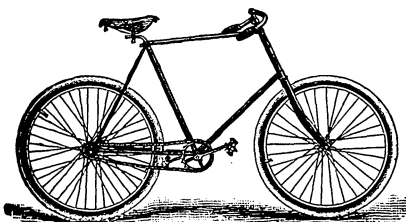
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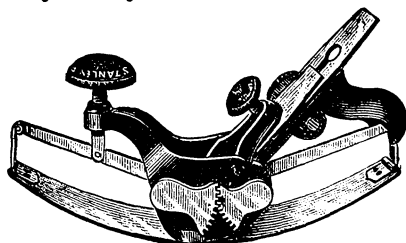
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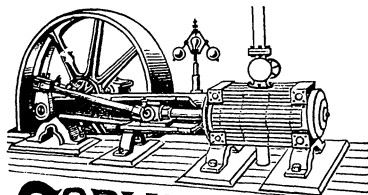
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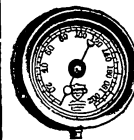
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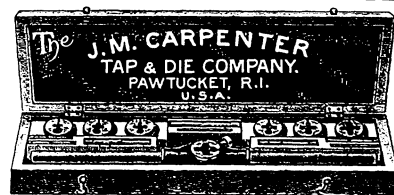
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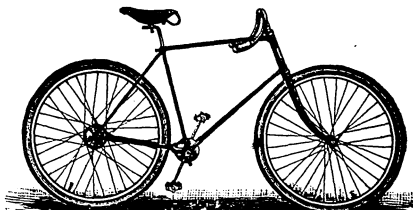
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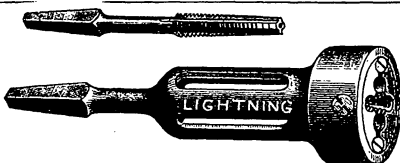
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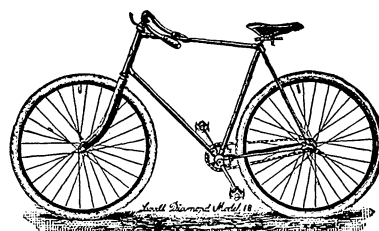
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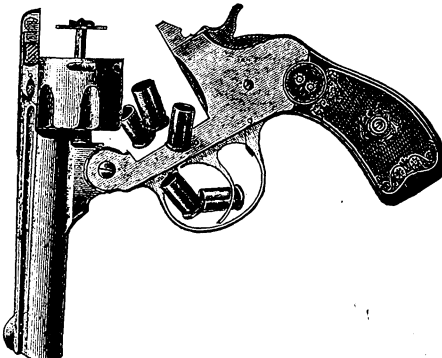
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intended to run from 200 to 450 revolutions per minute. The driving cones are 5, $6\frac{1}{2}$ and $7\frac{1}{2}$ inches in diameter for $1\frac{1}{4}$ inch belt. The machine weighs 550 pounds with the countershaft.

The spindle of the upright tapping machine shown in Fig. 2 is driven by bevel gearing arranged as plainly indicated in the engraving and it may be reversed and stopped automatically or by hand. The vertical motion of the tap spindle is given by two foot levers.

whom 370,056 490 marks were paid in wages, an average of 878.74 marks, or \$220 per annum. The total paid for injury and death through accidents in 1893 aggregated 5,320,347 marks. The cost of examining accidents and awarding benefits was 88,821 marks, the cost of litigation was 55,324 marks, the cost of measures for the prevention of accidents was 56,139 marks, and the outlays for general administration were 300,500 marks. Besides this, 2,128,139

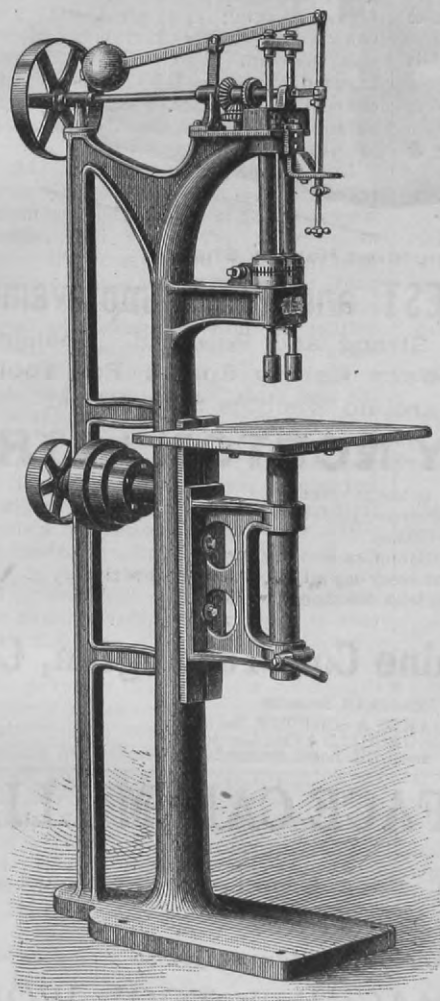


Fig. 1.—Light Adjustable Two-Spindle Tapping Machine.

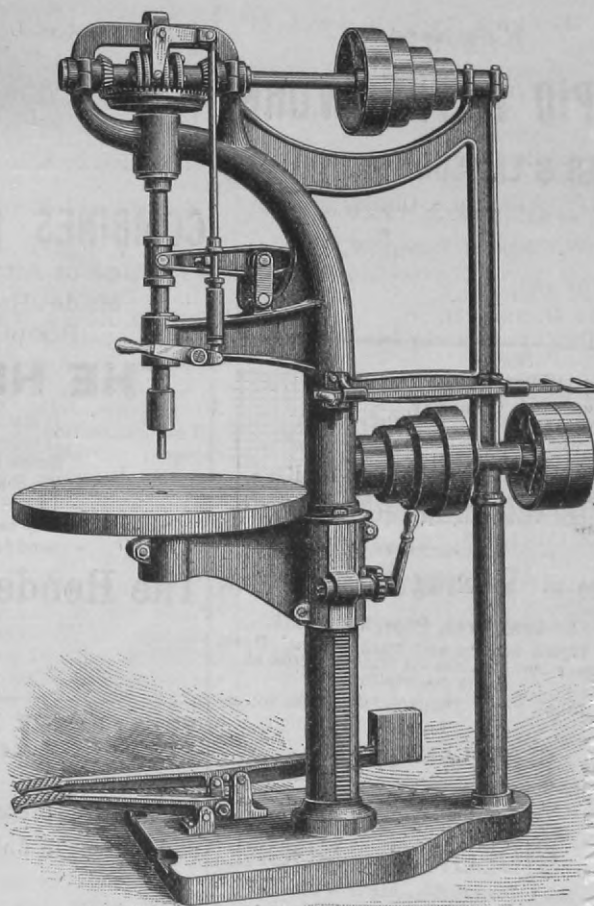


Fig. 2.—Upright Tapping Machine.

PRATT & WHITNEY TAPPING MACHINES.

run in long sleeves, the spindle bearings being eccentric to the sleeve bearings. On these sleeves are worm gears with worms which turn them both at once and lock them in position, thereby avoiding the necessity for clamping. The taps while running are moved down till they catch to the work, when they feed themselves in until an adjustable stop strikes a cam which throws out the driving clutch and stops the spindles. The spindles are reversed by throwing the clutch over still further into another clutch gear and the taps feed themselves out, the balance then raising them out of the way. The table is 15 inches in diameter and has a vertical adjustment of 12 inches. The spindles are $8\frac{1}{4}$ inches from the column and are

The machine taps from $\frac{1}{4}$ to $\frac{3}{4}$ inch diameter, $4\frac{1}{2}$ inches deep. The work table is 28 inches diameter, has a vertical adjustment of 17 inches by rack and pinion, and will take work 21 inches high. The floor space is 5 feet 4 inches square; height 6 feet 10 inches and weight 1200 pounds. Both these machines are built by the Pratt & Whitney Company of Hartford, Conn.

The last report relating to the administration of the fund for the insurance of workmen against injury from accidents in Germany shows some rather large figures, so far as the mining industry of that country is concerned. In 1893 there were 2215 mining undertakings, employing 421,124 workmen, to

marks were paid into reserve fund, making the total tax to the mining industry of Germany in the year 1893 for compulsory accident insurance 7,949,270 marks, equal to nearly \$2,000,000.

Efforts are being made toward establishing a commercial bureau at San Luis Potosi, Mexico, with the view of assisting in the development of the trade between the United States and the Mexican Republic. The establishment of such an institution at that point—the center of some of the largest mining interests of the world, and from which the annual shipment of ores to this country is very large—cannot fail to be of commercial advantage to both countries.

The Western Foundrymen's Association.

The fall and winter meetings of the Western Foundrymen's Association were inaugurated at Chicago in very pleasant fashion on September 26. At the invitation of Pickands, Brown & Co., sales agents for the pig iron manufactured by the Illinois Steel Company, the association visited the South Chicago plant of that company, leaving Chicago at 2 p.m. Special arrangements were made by which the visitors were landed in the company's yard at South Chicago in the immediate vicinity of the blast furnaces and steel works. A list of those participating in the excursion is as follows, beginning with residents of Chicago:

George M. Sargent, W. D. Sargent, G. H. Sargent, of the Sargent Company.
E. G. Elcock, Peter Marschall, of Hansell, Elcock & Co.
S. T. Johnston of Whiting Foundry Equipment Company.
Malcolm McDowell of McDowell Steel Company.
C. S. Reed of Chicago Retort & Fire Brick Company.
W. M. Wilson of S. Obermayer Company.
R. W. Hunt of Robert W. Hunt & Co.
F. B. Whitcomb.
John M. Sweeney.
S. Dauchy of Dauchy Iron Works.
E. C. Potter.
E. J. Welch, Robert Craig, of Weir & Craig Mfg. Company.
John H. Blood.
W. W. Backman.
Wm. Francis, W. Nygren, of King & Andrews Company.
H. S. Vrooman, N. C. Fisher, of Garden City Sand Company.
James Frake.
H. A. Keith of East Chicago Foundry Company.
W. C. Waterbury, H. L. Waterbury, C. E. Lewis, of Foster, Hawes & Co.
John J. Meehan, J. Henry Debus, of Lake Shore Foundry Company.
C. H. Vannier, G. W. Henderson, of Griffin Wheel Company.
C. I. Bewley of McCormick Harvesting Machine Company.
L. Wolff, Jr., C. J. Wolff, of L. Wolff Mfg. Company.
M. D. Bastues, Reedy Elevator Company.
D. L. Cobb, Sloss Iron & Steel Company.
H. S. Pickands, C. P. Wheeler, James Fyfe, A. C. Ely, of Pickands, Brown & Co.
W. E. Wakefield of John Fetherstone's Sons.
A. Sorge, Jr., of Fraser & Chalmers.
W. S. Cummings of Board & Cummings.
F. H. Taylor of Union Foundry and Pullman Car Wheel Works.
S. C. Hibben.
C. H. Besley of C. H. Besley & Co.
T. A. Haggerty.
E. C. Greenlee of Greenlee Bros. & Co.
J. F. Laubender.
A. M. Thompson of Link Belt Machinery Company.
E. W. Yeomans of E. W. Yeomans & Co.
J. R. Graves of Chicago Stove Works.
Geo. W. Cope, J. K. Hanes, of *The Iron Age*.
J. B. Mansfield of the *Industrial World*.
F. H. Clark of the *Railroad Gazette*.

B. M. Gardner of the *Iron Trade Review*.

G. D. Turner of Turner, Dickinson & Co.

From outside points the following were present:

A. W. McArthur of Rockford Foundry Company, Rockford, Ill.

C. A. Sercomb of Schwab & Sercomb, Milwaukee, Wis.

C. C. Heald of Union Malleable Iron Company, Moline, Ill.

W. D. Turner, H. N. Wade, United States Wind Engine & Pump Company, Batavia, Ill.

Thomas Snow of Challenge Wind Mill & Feed Mill Company, Batavia, Ill.

C. H. Woodruff, J. C. Daniels, of C. H. Woodruff Company, Elgin, Ill.

E. A. Wheeler of Wheeler Furnace Company, Sharon, Pa.

Alfred D. Edwards of Illinois Iron & Bolt Company, Carpentersville, Ill.

M. N. McLaren of Edward P. Allis Company, Milwaukee, Wis.

L. A. Baker of L. A. Baker & Co., Elgin, Ill.

Lewis J. Cox of Terre Haute Car & Mfg. Company, Terre Haute, Ind.

H. M. Lane of Lane & Bodley Company, Cincinnati.

A. L. Hott of A. L. Hott & Co., Harvey, Ill.

F. B. Bain of Morris Foundry Company, Morris, Ill.

John A. Penton of the *Foundry*, Detroit.

L. E. Ellsworth of Racine Hardware Company, Racine, Wis.

C. S. Austin of F. F. Collins Mfg. Company, San Antonio, Texas.

W. N. Moore, Lewis Moore, of Joliet Stove Works, Joliet, Ill.

The first section of the works which engaged the attention of the visitors was the Bessemer converting department. Here they witnessed several blows. The converters, three in number, were running on rail steel, taking charges of 25,000 pounds of metal and pouring six ingots to a heat. The charges were of direct metal, brought from the blast furnaces in small cars on an elevated railroad passing in front of the converters. The visitors were informed that while direct metal was usually employed it was necessary at times to run a cupola to melt pig iron and scrap. There are two cupolas, but only one is in operation at one time. With one cupola as high as 327 tons of metal have been melted in 12 hours, while 300 tons are often exceeded in the same time. The methods of handling ladles, stripping ingots and placing and removing ingot molds, done with celerity and deftness by hydraulic cranes, excited admiration.

The blooming and rail mill was next visited. The great mass of machinery was running at an easy gait, few men were in attendance, and there was no appearance of haste, yet the information was quietly given that 1200 tons of rails would be the output for the 24 hours then passing. The initial heat of the metal in the blast furnace was seen to suffice in this operation until the completed rails were racked in the cooling sheds. Manual labor is also completely dispensed with from the blast furnace to the straighteners. This mill has recently been arranged so as to roll billets instead of rails. Shears have been put in to cut the billets to length, and a conveyor has been built in the rear of the mill to automatically carry the billets from the shears into the yard, where they are elevated over docks, on which they are delivered in piles ready to be loaded into cars. The mill is so arranged that it can be di-

verted at once to rolling billets, so that even the time can be utilized which is generally lost in changing rolls to turn out different sections of rails.

The new blast furnace plant was the next object of interest, with its four stacks standing in a row, guarded by a long line of hot blast stoves. Hastily passing through the boiler house, in which the waste gases from the furnaces generate steam in 40 boilers, the visitors next reached the power house, with its ten massive blast engines, making a formidable array of ponderous machinery. One furnace after another was then inspected. Three were in operation, and preparations were being made to start the fourth. Here the visitors scattered, some looking more closely into methods of charging, others going through cast houses, and numbers exploring the great ore and coke yards, where mountains of ore and fuel are piled, while overhead towered the great Brown hoisting and conveying machines, which play such an important part in rapidly unloading ore vessels.

Leaving the furnace plant, a trip was taken to the new open hearth steel works and plate mill. This is a mammoth plant, completely independent from the other buildings of the company, and if erected as a separate enterprise would in itself command the attention of those accustomed to large operations. Work on it has progressed slowly on account of the depression in the iron trade, but so much has been done that only a few more weeks will be required for its completion. The company will then have one of the finest and largest plate mills in the world. In the immediate vicinity of the plate mill is the company's laboratory, housed in a fine fire proof structure. Many of the party seized the opportunity of inspecting a well equipped laboratory, in view of the increasing interest taken by the foundry trade in the application of chemistry to foundry practice. Too little time was afforded, however, for more than a hasty glance at the apparatus and a very brief description by the chief chemist of the manner in which the chemist's services are called upon during the several stages of the manufacture of steel. Shortly after 5 o'clock the visitors embarked for their return trip to the city, well pleased with the experience of the afternoon and delighted with the entertainment furnished by their hosts.

According to previous arrangement, the members of the association and a number of their friends assembled at the Palmer House in the evening to participate in a banquet. Some 60 covers were laid. After the last course of a most inviting menu had been served, President George M. Sargent rapped for order and introduced the *post-prandial* exercises by a graceful speech, in which he dwelt upon the flattering prospects for the success of the association, referred to the pleasant manner in which the afternoon had been passed, and welcomed the members and friends whom he saw around him. A resolution was then adopted expressing the thanks of the association to Pickands, Brown & Co. for the courtesies extended in the visit to the Illinois Steel Company's Works.

Edward C. Potter was called upon to read a paper which he had prepared by request upon

The Blast Furnace,

which is as follows:

Raw iron, or "pig iron," as it is commonly called, is produced by deriving

from iron ores (oxides of iron) the metallic iron they contain in their composition. Stated briefly, this is accomplished by exposing the ores to the chemical action of carbonic oxide, formed by the combustion of coal or coke, which by taking up the oxygen of the oxides of iron leaves the metallic iron free. In addition to this, the earthy impurities of the ores have to be dealt with in a manner to be explained later.

The apparatus in which this process is carried on is known as a blast furnace, so called because the ordinary combustion of the fuel is augmented and accelerated by forcing into the furnace by mechanical means large volumes of air. This air, delivered into the furnace under high pressure, is known as "the blast." As indicated above, the materials to be dealt with in the operation are, 1, the ore; 2, the fuel by whose combustion we obtain the active element in the reduction of the ore, carbonic oxide (this fuel is a more or less pure carbon in the shape of charcoal, coke or anthracite coal); 3, a material technically called a "flux" is required, whose office is to remove the earthy impurities of the ores. For this purpose limestone is usually employed. The way in which this is accomplished is rather an intricate chemical reaction, but stated as simply as possible the reaction is as follows: The principal earth associated with the ore is common clay, or silicate of aluminum, as it is chemically called. This material, as every one knows, is quite infusible and hence impossible to remove by the mere application of heat. It is a chemical fact, however, that by the addition of lime to the silicate of aluminum, forming the double silicate of lime and aluminum, this double silicate being quite fusible and being lighter than the metallic iron floats upon its surface and is thence drawn off in a manner to be indicated later.

This is, briefly, the office of the flux. These three materials together with the air blown into the furnace are all that are required to carry on the operation of smelting pig iron. I mention the air, as that is not by any means as insignificant a feature as would be at first imagined; for the actual weight of air blown per ton of iron produced is six or seven times the weight of the solid materials charged.

The blast furnace itself is a very large structure, circular in section, of a height varying from 60 to 90 feet and a largest diameter of about one fourth the height. The contour of the interior is not that of a perfect cylinder, but from the point of largest diameter (technically called the "bosh" diameter) the walls are drawn in both upward and downward, so that at the bottom of the furnace the diameter is only about one-half the bosh diameter and at the top about 30 per cent. smaller than the bosh. The lowest part of the furnace is called the "hearth" or "crucible," for it is here that the molten iron collects before being drawn off. The walls of the crucible are from 5 to 6 feet in height and usually perpendicular. From the top of the crucible walls the furnace slopes outward and upward till the bosh is reached. This whole section of the furnace is also known as the "boshes," and it is here that the actual fusion of the materials takes place. From the bosh up to the top the walls slope in again.

The materials—viz., ore, fuel and flux—are charged into the furnace from the top by means of a mechanism known as a "bell and hopper," which at the same time closes the top of the furnace. A

heavy cast iron hopper is fitted over the top of the furnace, leaving an opening in its center of about half the bosh diameter. This opening is closed by a heavy iron bell, lifted into position from the interior of the furnace so that the lower edge of the bell laps over the lower edge of the hopper on its under side for 3 or 4 inches. Thus when the bell is drawn up tightly against the hopper the furnace is tightly closed even to the escape of gas. The materials are then dumped into the hopper until it is full, when the bell is then lowered by means of a mechanically actuated and balanced lever arm so that a space of 15 to 20 inches is opened between the contact edge of the bell and hopper, and through this space the materials slide over the sloping sides of the bell into the interior of the furnace. This bell shape is used for the purpose of obtaining an equal and uniform distribution of the materials over the area of the furnace, which would not be possible were the materials dumped into an ordinary opening. This uniform distribution in charging is very important to the uniform working of the furnace; for if the materials were all dumped into the center or to one side the ascending carbonic oxide gas, seeking the easiest way out, would but imperfectly act upon the great mass accumulated in one locality and the furnace would work one sided. The great height of the furnace is required in order to expose the ore for a sufficiently long time to the action of the carbonic oxide. The descent of the ore from the top to the bottom of the furnace occupies from 18 to 24 hours. On a level with the floor of the crucible on the front side of the furnace is situated the "tapping hole." This hole pierces the wall of the furnace to its interior and through it the molten iron is drawn out. The tapping hole leads directly into a trough which communicates with the casting beds. This hole is stopped up with clay during the time the iron is collecting in the crucible. Tapping takes place usually every six hours. About 3 feet above the tapping hole and sometimes directly over it, sometimes to one side, is the slag tap or "cinder notch," as it is technically called. The slag formed by the flux, floating upon the surface of the iron, is here drawn off from time to time as it rises to this height. It is usually run directly into buggies or cars constructed for the purpose and hauled off to the cinder dump.

The blast is introduced into the furnace at the top of the crucible, about 5 or 6 feet above the floor. At six or eight equidistant points in the circumference of the furnace wall openings are made into the interior of the furnace. Into these openings water cooled "holders" of bronze or iron are fitted. Into these holders are accurately fitted the blast nozzles or "tuyeres," also water cooled. The water cooling is accomplished by casting a coil of pipe in the iron holder or tuyere through which water is continually forced, or in the case of the bronze tuyere and holder the walls are made double with a space between in which water is kept circulating. At a sufficient height above the tuyeres a main blast pipe encircles the furnace, from which branches are led down to each tuyere. The tuyere nozzles are inserted from 6 to 10 inches beyond the inner wall into the furnace. The water cooling of the tuyeres and holders, while designed primarily for their maintenance, aids much in preserving the brick work adjacent to them. Following up this hint, the bosh walls

of the furnace are now greatly prolonged in life by inserting rows of water cooled plates completely encircling the furnace at distances of about 30 inches between the rows. These are built in the brick work and are invisible except the outside edge of the plate and the water connections. These plates are removable in case of leak, which is rare.

The accessories to the blast furnace proper are the boilers, blowing engines, hot blast stoves, hoists and water supply. The boilers and stoves are heated by waste gases from the furnace, so that the furnace is practically self supporting in the matter of power, the only fuel necessary being that put into the furnace for the purpose of smelting. The furnace gases rise to the top of the furnace, and are thence conducted away by a large pipe called "the down take," which carries the gases down to the main flue, which lies underground. This flue conducts the gases to the boilers and stoves. The lower end of the down take is enlarged just before it enters the flue into a chamber of considerable size known as the "dust catcher," which name sufficiently describes its function. The gases carry with them considerable quantities of dust, which accumulates in the flues, stoves and boilers, seriously impairing their efficiency by choking them. This the dust catcher is designed to obviate. The boilers and blowing engines need little description, as they speak for themselves. The use and operation of the hot blast stove is a subject of much interest, and to the furnaceman it is a very considerable factor in the furnace economy.

It is apparent that if air at the temperature of the surrounding atmosphere be blown into the furnace it will require a certain amount of fuel to bring it up to the temperature of the fusing mass. If this air could be heated, and that, too, without further expenditure of fuel, before it is delivered into the furnace it is evident a considerable economy of smelting fuel must result. This is what is accomplished by the hot blast stove. The waste gases of the furnace, which formerly were permitted to escape into the air, are by this apparatus utilized for the heating of the blast. Stoves as constructed nowadays consist of a large shell of tank plate inclosing a mass of fire brick so disposed as to form a large number of small flues or checker work. Each stove measures from 15 to 20 feet in diameter and 60 to 70 feet in height, being nearly as large as the blast furnace itself. A total cross section area of, say, 300 square feet is subdivided by the brick work into a large number of small flues of, say, 40 square inches, thus multiplying the heating surface enormously. These flues are constructed perpendicularly. The gas is admitted at the bottom of one side into a chamber where it is mixed with the proper proportion of air to produce combustion; thus ignited it rises to the top of the stove, where it is deflected down again through a series of small flues. On reaching the bottom it is deflected up again and then down, having traversed the height of the stove four times before it passes off by the chimney. The gas having been passed through the stove a sufficiently long time to bring the whole mass of brickwork to a bright red heat, it is then shut off and the blast from the blowing engines is then admitted on the opposite side of the stove from the gas, and is made to travel over the same path through the stove in the reverse direc-

tion. During its passage it absorbs the heat from the brick work, raising its own temperature to from 1200-1500° F. From the stove the air is carried by the blast main directly to the tuyeres. There are usually three and sometimes four stoves attached to each furnace. Each stove is kept on gas for two hours and on air for one hour; three stoves therefore permit of two stoves being kept continually on gas and one on air, a stove being changed every hour. Of course, before the blast is shut off of one stove it is admitted through a fresh one, as the blast must be kept continuously on the furnace.

Another valuable feature of the hot blast stove is the fact that it places within the control of the furnace manager an amount of caloric or heat energy entirely subject to his manipulation; thus, if the furnace is disposed to work cold, an increase of temperature of the blast will usually act as a corrective, and *vice versa*. In the uniform production of a desired grade of iron this is of the highest value. In this connection a very brief consideration of the chemistry of pig iron may not be out of place.

In recovering from the ore the iron it contains we do not obtain that iron chemically pure, nor is it desirable that we should do so. We have seen how the earthy impurities were, to a considerable extent, removed—viz., the silicates of alumina, lime and whatever of magnesia there may be in the ore. But certain other elements, notably phosphorus and manganese, are not thus removed; nor are they ever completely removed, the second only partially, the first not at all. In addition to the impurities of the ores we are adding with the fuel, especially where coke is used, another lot of impurities, notably silica and sulphur. Silica, or silicic acid, as it is chemically called, being a compound of silicon and oxygen, is not capable of being decomposed into its constituent elements, silicon and oxygen, except at the very highest heat. Therefore, out of the very large amount of silica in the form of silicates that is charged into the furnace, we find only a comparatively small proportion appearing in the pig iron as silicon, which has doubtless been decomposed in some areas of very high temperatures before the tuyeres. A portion of the sulphur is carried off in the slag, but enough remains to make a deal of trouble to the pig iron consumer. In the resulting iron, then, we find in addition to the metallic iron such impurities as silicon, sulphur, phosphorus, manganese and carbon. The carbon in pig iron exists in two states, free carbon in the form of crystals or flakes and combined or dissolved carbon which has been taken up by the iron before the tuyeres. The proportions in which these two conditions of carbon exist in the pig iron depend upon the temperature of the furnace; if the furnace is hot, the carbon exists in very large percentage as free carbon or graphite; if the furnace is working cold, the carbon in the iron will be found largely as combined carbon with little graphite. So, too, as might be inferred from what was said before, a cold iron will contain little silicon, as the temperature before the tuyeres has not been sufficient to decompose the silicic acid. The temperature also has a marked influence on the behavior of the sulphur. With the furnace working hot, it is nearly all carried off in the slag, but at lower temperatures its greater affinity for the iron asserts itself and a cold iron is found to contain an objectionable amount of sul-

phur. Cold iron, therefore, will be low in silicon, low in graphitic carbon and high in sulphur; for most purposes an undesirable combination. The value of the hot blast stoves in enabling the furnace manager to correct the temperatures of his furnace is thus made plain.

The operations of the blast furnace are continuous until the fire brick lining wears out. This occurs in from two to three years under ordinary circumstances; or a better way of stating the life of the lining is that it will generally yield 125,000 to 150,000 tons of iron, though one or two of America's famous furnaces have turned out 300,000 and even 400,000 tons on a single lining. The management of a blast furnace, the proper mixing of the materials, the regulation of the working of the furnace itself for the production of a large uniform and economical output calls for the highest skill, watchfulness, patience and often courage. An accident to the furnace is almost always expensive and often dangerous; the apparatus is always operated under high pressure and the highest heats known to science. Altogether the management of a blast furnace presents a most intricate problem in economical metallurgy.

The reading of this able paper was listened to most attentively and the clearness and compactness with which the subject was handled elicited the strongest expressions of approval, which were finally voiced officially in a vote of thanks to the author.

The chairman then called upon E. A. Wheeler of Sharon, Pa., who referred to the development of the Bessemer process and concluded his remarks as follows:

Great strides have been made in the iron business, and the only party engaged in the iron business that has not been benefited by it is the foundryman. I see the foundryman still depends on judging iron by the fracture. It is not the right way to do. The fracture does not show the quality of the iron. Only to day a gentleman showed me a long list of iron for sale ranging from 1½ per cent. silicon to 3½ per cent. I think I could select from his line a mixture that would suit any foundryman and I can do it a great deal better than any one by the fracture. I hope to see the day when foundrymen will order iron by analysis without any regard to fracture.

Robert W. Hunt was next called upon, who said:

The Bessemer process has been alluded to by the last speaker. Its history has been a remarkable one, and it has been such a short one that it surprises us that any such thing should be accomplished in one's lifetime. It was comparatively the other day that it was an experiment. In 1865 the first Bessemer steel made in America was made at Wyandotte, Mich., in a little experimental works connected with a charcoal blast furnace, and from that humble beginning came those great works which you have visited this afternoon. There are two claimants for the invention, Mr. Bessemer in England and Mr. Kelly in America. They both took up the fight; but at last it was decided that two companies were but working against each other; capitalists could not be induced to look upon the process as more than a curiosity and possibility in the future. Eventually the capitalists interested on both sides saw that if it was to be a success they had better pool their interests and own all the patents. When you notice the process moving so smoothly, apparently without the aid

of human hands, you little imagine the difficulties and uncertainties that existed during the experiments. The pig was put into the cupola. The cupola as applied to the Bessemer industry was an American adaptation. In all foreign countries, except Sweden, the iron was melted in reverberatory furnaces. It took some three or four hours to melt the charge, and it was one of the men at the Wyandotte works who suggested experimenting with melting the iron in a cupola. It was not entirely successful owing to the cupola being very small, but it was successful enough to prove that it could be done if proper space were taken and proper cupolas built. The fuel consumption has been brought down less and less until it has reached the present point. The cupola to day in the Bessemer practice melts about 1 to 11. Of course this is away beyond anything you reach in your foundry practice. The cupolas are very large and run the best part of a week.

Mr. Potter referred to the danger in operating a blast furnace. I never can hear of a danger of that kind without thinking of that bright light who yielded up his life to the blast furnace. I refer to my old friend Capt. Wm. R. Jones. It has been said that it was perhaps another instance of a general being shot on the picket line, because he was not absolutely called upon to be at the post of danger. But he was very constant and devoted to his duties and to the interests of his employers, and could not be happy unless he was present to get a furnace out of a difficulty. The result in this case was a slip of the stock or something, and the furnace broke out just above the middle and a great blast came out and he yielded up his life. Captain Jones and I were thrown together in the early days. We were making iron rails, and we thought 100 tons in 24 hours was pretty satisfactory work. To day they were making 1200 tons without anybody touching a rail. This has all been brought about by the application of thought, brain, science and chemistry. They are succeeding in getting the product much more cheaply than it was formerly thought possible, and making a good product too. They may say it is not as good as we had in the olden times, because it is made of much poorer material and is of inferior quality. Quite the opposite. We can take the cheap and poorer material and make the better product, just as we take the poorer individual and make a better man.

Malcolm McDowell was called upon and said: I like the remarks that have been made here to-night on the subject of chemistry. What I know of iron has come from hard work. Is it not possible for us in the foundry to have the appliances similar to what the Bessemer plant has? Captain Hunt says it is the cheapest way to melt iron. I look forward to the day, gentlemen, when the foundryman will have the appliances that will enable him to make the iron with the same accuracy that the steel man does. He should even have a Bessemer plant so that he can oxidize the metalloids and get any kind of material he needs. He will have the material and call upon the chemist to give the analysis and then he will know just what to use to bring about the desired results. I am looking forward to that day and working to that end when foundry practice will be of that nature that a foundryman can go back and reproduce the same thing that he did the day, month or year before.

H. S. Pickands spoke as follows: Some 13 years ago I was making iron in the Lake Superior region, and I suddenly got results that astonished me. In those days we had our iron analyzed about every five years. I was making No. 1 iron, and a white spot appeared in the fracture of the pig; otherwise it was an open No. 1 iron. I could not in my own mind locate the reason, and I found a chemist and had him analyze borings from the spot. He wrote a long letter about phosphorus and other things. I did not know what phosphorus was, and I did not know why if I should have any I should not have plenty; but I noticed that he put the silicon down very low. I put into the furnace some highly siliceous ore and

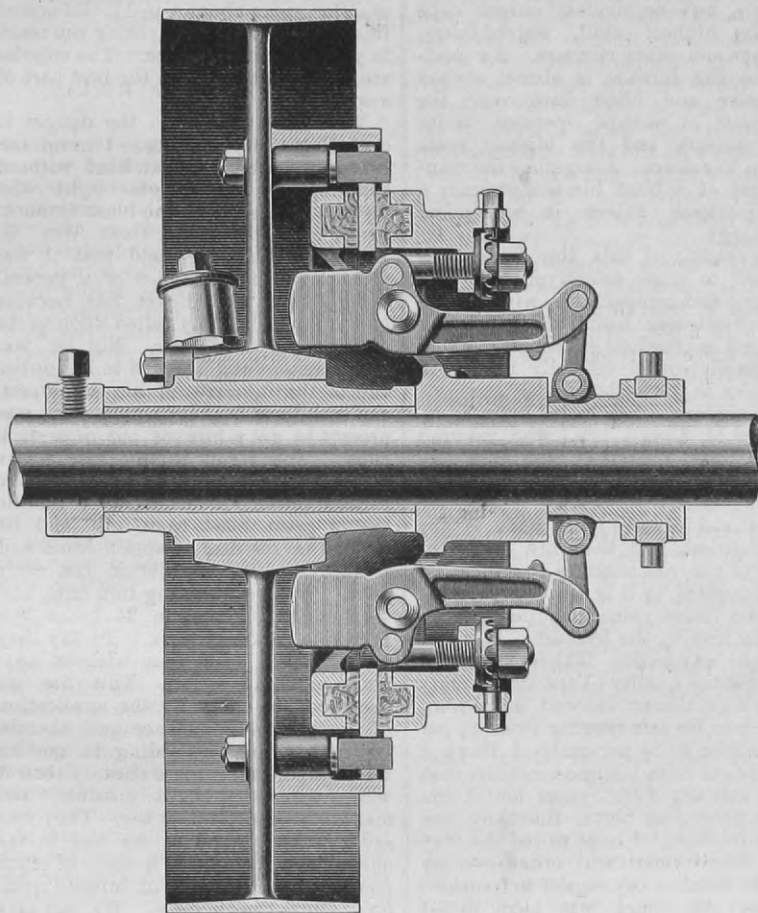
converter each day to make the ingot molds for the steel works. We ran our foundry after that without a cupola. I think it had been tried before, but I know that the thing can be successfully done and I know you can get any kind or grade of iron in the Bessemer converter. That opens up a very large field in foundry practice.

W. N. Moore said: In thinking over what might interest you to day in our visit to the steel works, there is one point that comes prominently to my mind. It is this fact: We saw ore that was bought by the ton and paid for by chemical analysis. It is put in the blast furnace with coke that is analyzed; limestone is put in that is analyzed; out of the furnace comes slag that is

chemistry to his every day foundry practice.

A. Sorge, Jr., said: In regard to some of the remarks made by the gentlemen who have spoken on the value of chemistry, I simply know that as far as we are concerned, I can assure you that we are using it every day. We are applying it just as closely as we can. In purchasing iron I insist upon purchasing from analysis. I mix my iron entirely from analysis. I know that we can produce to-morrow just what we produced—I will not say a year ago, for I have not been with Fraser & Chalmers that long—certainly three months ago. I have tried it repeatedly for the month past and I know we have produced results which had been produced several months ago. It is simply by the application of chemistry.

John M. Sweeney said: We have heard from gentlemen who are the exponents of the highest possibility of iron—Bessemer steel. Naturally we do not expect to follow out the process of theirs, but there are great changes taking place even in foundry practice. The benefits of the Bessemer process to the foundrymen have been far reaching. I have been from the beginning of this association in favor of the introduction of chemistry into foundry practice. I have talked of it so much that at times I have thought I would be considered a bore. It is quite important for the foundryman not only to know what chemical ingredients he puts into the cupola, but as well what he puts out. It is a matter of importance that all should know what is in their castings. It will pay to investigate the subject of chemistry in the foundry. Other gentlemen making short addresses were C. A. Sercomb, Thomas Snow, C. P. Wheeler and Geo. W. Cope.



THE BLISS FRICTION CLUTCH PULLEY.

the spot disappeared. That was the first I knew that low silicon would cause a white spot in iron. I took up the question of silicon in iron from that moment. I did not publish it in the papers; but I do not know but it was my gain that I did not make my experiments public, for I was getting on all right and everybody else was having a hard time.

Edward C. Potter then said: The remarks of Major McDowell remind me that I was once a foundryman. When the Bessemer process was first started at South Chicago we were very anxious to have a foundry for making our ingot molds. The powers that be wanted to be economical and said if I could build a foundry for \$2500 I might do it. The money gave out and I did not have a cupola, and the only thing I could think of was to blow the metal in the converter down to the proper point in carbon and take that. I did so, and had success. It took two heats of a

analyzed; from the top of the furnace comes gas, and that is analyzed; the furnace is lined with brick, and that is analyzed; the iron that comes from the furnace is analyzed, and when the casting is taken from the mixture, that is analyzed. While they were pouring these melts a test was taken, and that little test ingot has a physical test, and it has a chemical test before it is cut into rails. Through the whole process the laboratory is the key to the situation. From the standpoint of a foundryman, it seems to me that there is nothing that can so engage your attention as this matter of chemical analysis of iron. The steel men employ the chemist from necessity. They cannot exist without him. The foundryman has not employed him, because he has not been a necessity. Mr. Bessemer's business was saved by the use of a chemist, and it seems not impossible to me that the man who is successful in the foundry business will be so by the application of

The Bliss Friction Clutch Pulley.

The E. W. Bliss Company of Brooklyn, N. Y., have just placed on the market the friction clutch pulley of which we present a sectional view. Flexibly connected to the pulley is a friction disk against which the clutch members grip. By this construction if the pulley wears out of true on the shaft no difference results in the operation of the clutch, no undue strains are brought on any of the parts and no adjustments are necessary to compensate for wear. There are only two clutch members, one keyed rigidly to the shaft to which the levers are attached, and the other movable. The levers are so balanced that at any speed at which the clutch is run the centrifugal force has no tendency to throw the clutch in or out of operation.

The clutching members are circular and concentric with the shaft, the only projecting parts being the levers. Four elbow levers are arranged at equal distances about the shaft. To the outer end of each lever is attached a link connected to a sleeve formed with a groove in which is the operating yoke. The movement of this sleeve serves to bring the friction disk in contact with the disk on the pulley. All necessary adjustment is provided by the screws shown. The horse-power which the various sizes of these clutches will transmit is obtained from tests by a dynamometer constructed for the purpose. The clutches are made for pulleys from 14 to 96 inches in diameter.

Wheat sold down to 50 cents per bushel in the Chicago market on September 28.

The New Hurst Gun.

Dispatches from Washington state that the Ordnance Department at the Washington Navy Yard is now putting the finishing touches to a gun which, if it proves a success, will mark a long step forward in the science of artillery. That the ordnance experts expect great things of this gun is shown by their recommendations to Congress, and the fact that \$50,000 was appropriated to pay for the making of the gun and the projectiles guarantees it a fair trial. The gun is the invention of Harris P. Hurst of Mississippi. While the main purpose of the gun is, apparently, to fire steel projectiles at a greater velocity and with a greater penetrating power than at present, the inventor expects it to fire shells filled with high explosives. Concerning this gun we take the following from the *New York Times*:

The principle of the Hurst gun is not a new one, but so far no one has ever been able to succeed in perfecting a gun on this principle. It is what is known in military parlance as a "multicharge" gun. In other words, it takes two charges to fire the projectile. In the ordinary gun the strain on the breech is at a maximum when the projectile is first started, whereas in the Hurst gun the projectile is put in motion by a primary charge of from 10 to 15 per cent. of the maximum charge. When the projectile is under way, having an initial velocity of 400 feet per second, the large charge of powder is exploded. Having thus a constantly increasing powder chamber in which to expand the gases and a moving projectile against which to exert full force, the strain upon the walls of the gun is greatly lessened, and the danger of explosion reduced to a minimum.

The gun is a combination of an 8-inch barrel and a 10-inch breech, or, better, the barrel of an 8-inch gun with the powder chamber of a 10-inch gun. It is designed to carry a projectile the weight of that used in an 8-inch gun, but the Hurst gun is 9 feet longer than the ordinary 8 inch gun, being 36 feet in length. The powder chamber is about 6 feet in length and 11 inches in diameter. The rifling of the Hurst gun is also above the average, being a turn in 12 feet instead of one in about 16 feet.

The most peculiar thing about the system is the projectile. This is composed of four parts. In the center of the charge is a steel tube 66 inches in length, 4 inches in inside diameter and 6 inches outside diameter. In loading the shell, 10 per cent. of the powder charge is placed at the bottom of this tube. Then the projectile is placed in position. This is shaped like a skyrocket, with a cone shaped head 15.3 inches long and 8 inches in diameter, the smaller end fitting into the steel tube. The tail of this projectile is 30 inches in length and 4 inches in diameter. The projectile and the steel tube are inclosed in a copper cylinder about 4 feet in length and 1 foot in diameter. Between the steel tube and the copper tube the second charge of powder is placed. This charge of powder is held in position by a wooden block. The whole cartridge is placed in the breech of the gun. In firing it, the primary charge is exploded. When the projectile reaches the mouth of the steel tube, the flame from the primary charge ignites the powder in the copper casing and thus explodes the second charge.

The advantages derived from the double explosion may be briefly de-

scribed. The weight of the projectile used in an 8-inch gun is 250 pounds and the powder charge 125 pounds. With the Hurst gun, carrying the same weight of projectile, it will be possible to use a powder charge of 220 pounds. The powder charge being excessive, the velocity obtained is greater than that of any other system. The explosion of 125 pounds of powder in the ordinary 8-inch gun gives a pressure on the walls of the gun of from 16 to 20 tons a square inch. But with the Hurst system it is estimated the pressure resulting from the firing of 220 pounds of powder will be much less than 15 tons. At the same time the muzzle pressure will be greater by far than that of any other gun constructed here or abroad.

The gun will be tested at Indian Head next month. Ten shells have been prepared for it. The projectile to be used is made of cast iron, as the tests are merely for chamber pressure and velocity. When the tests for pressure and velocity have been finished the Ordnance Department will begin a series of experiments with the view of determining the proper weight and size of the steel projectile to be used. It is expected that in this gun a shot weighing 350 to 400 pounds can be used. The shot being only 8 inches in diameter and about 4 feet long, it would appear impossible to keep it from turning end over end during its flight. This, it is thought, will be successfully overcome by the increased rifling.

The initial velocity of a projectile fired with the usual charge from an 8-inch gun is 2100 feet per second, and the range 8 miles. The skyrocket projectile of the Hurst gun is expected to show an initial velocity on leaving the gun of 2500 feet per second and to have a range of 10 miles. If a longer and heavier projectile is used, it will develop a range of over 10 miles, and it would not be an extravagant estimate to say that in such a case it will develop an initial velocity of 2700 feet per second, with a corresponding range.

Freight Steamer for Great Lake Traffic.

On the 13th inst. there was launched from the Globe Iron Works Company of Cleveland a steel steamer, which will be engaged between Duluth and Buffalo. This boat, which has several special structural features insuring great strength, will rank among the best freight carriers on the lakes. Her two Scotch boilers, which have been referred to as the largest ever constructed in the lake region, are each 16 feet in diameter by 12½ feet long, the diameter requiring a shell of 1⅝ inches thickness. They have four furnaces each and are adapted to 160 pounds steam pressure. Cylinders of the triple expansion engines are also a little larger than those of engines in other freight boats built lately, the diameters being 24, 39 and 63 inches by 42 inches stroke, as against 24, 38 and 61 inches by 42 inches stroke in the first of the Minnesota line ships. The Minnesota boats have each three 12-foot boilers.

Freight rates are to be advanced very materially to Minnesota points. On October 6 the lake rate on iron articles will be advanced, Cleveland to St. Paul and Minneapolis, from 12 cents per hundred less than car loads, and 8 cents car loads, to 20 cents and 15 cents respectively, being an advance

of over 75 per cent. Class rates will also be advanced on the same date in some cases even a higher per cent. than the advance on the commodity rate specified. Local agents have been directed to quote the following rates, which have been agreed upon by all lake line managers: 60, 50, 35, 25, 20 and 15 cents respectively, being a general advance of over 63 per cent. The old rates were 30, 25, 20, 18, 15 and 12 cents respectively. The Duluth all-rail lines have agreed to demand their full proportion of these new rates, and will not deviate therefrom in the least until the close of navigation, about December 1. This means that for once stability will be effected in lake and rail rates westbound. The 12½ cent rate from Chicago is also to go up, although Chairman Midgely of the Western Freight Association has said nothing final in regard to the matter.

New Tin Plate Works.

During the past week or two numerous stories have been afloat respecting the establishment of new tin plate enterprises. Some of these are rumors of the vaguest sort, others are well founded reports of contemplated work, and still others relate to actual operations begun. Without trying to determine what has concentrated this activity apparently within so short and so recent a period, there are certain lines of thought suggested by this special activity that are interesting to follow. A satisfactory feature attaching to many of the reports is that they are coupled more or less directly with the names of large iron and steel making concerns. In a few instances the concerns are directly interested in the tin plate works, but in most cases the relationship is an indirect commercial one. The big steel works of the country which formerly depended for the consumption of their product on the demand for steel rails, structural material and the like are becoming anxious for the future disposition of their enormous tonnage. For this reason they are taking up, or rather encouraging, various side enterprises, and the latest direction to which some of them have turned their attention is the manufacture of tin plates. We know an instance of a prominent steel works who are now negotiating with capitalists for the erection of tin plate works in the neighborhood of their plant, guaranteeing them steel at a certain low figure for a term of years. The steel works are among the most prominent in the country and the tin plate concerns that will feed upon them are being pushed by men of enterprise and ample capital.

A single tin plate is a small piece of steel, but when the total consumption of the country is taken into consideration, the number of tons of metal that it represents is not inconsiderable. Assuming that the domestic consumption of tin plates is a quarter of a million tons a year, it will be seen that the Bessemer and open hearth steel works can afford to cater to the tin plate mills, provided they will guarantee to use a sufficient quantity of steel. It would be inexpedient for the big steel works to manage their own tin plate mills. To do so they would have to put in sheet mills, and then attend to all the troublesome and delicate work of dipping, not to mention the extra labor involved in disposing of the finished plates. The end that they have in view is the establishment of independent tin plate works in their vicinity, to whom they can supply steel in the form of billets, or in some cases rolling them down to tin

plate bars. The tin works have their own rolling mill plant for reducing steel to sheets, and their dipping works for putting them into the marketable form of tin plates. The present condition of the steel trade and the interest shown in the tin plate business by the steel manufacturers is, if not a guarantee, at least a good augury for the continued progress of the American tin plate industry. The price of steel now is almost on a parity with the English market, and if the American manufacturer can get his black sheets even approximately as cheap as the

Electric Light Standard.

We illustrate an electric light standard, two of which were made by the Ludlow-Saylor Wire Company of St. Louis, Mo., for the new Union Station in that city. They are made entirely of iron, with black iron finish, and stand 9 feet in height. They are placed on either side of the *port cochère*, which extends beyond the main entrance to the station, and the *port cochère* is also surrounded by an iron area rail, a por-



ELECTRIC LIGHT STANDARD.

Welshman buys his, there is not the shadow of a doubt but that the American works will prosper.—*The Metal Worker*.

The starting of the five new mills at the American Tin Plate Company's Works, Elwood, Ind., has been delayed by the unforeseen necessity of removing the two large driving wheels, which were found to be faulty, and the procuring of others in their place. The difficulty in regard to the wage scale in the hot mills department of the works has not yet been adjusted, but the men have continued at work under the old scale up to the end of this month. On October 1 the cut of 25 to 30 per cent. in wages, demanded by the firm, is to go into effect.

tion of which appears in the engraving. There is some 75 feet of the area rail, which is finished the same as the standards. Both the standards and area rail were made from drawings by the architect of the entire structure, T. C. Link. We understand that these standards are the first of their kind ever made in St. Louis.

The Hazard Wire Rope Works of Wilkesbarre, Pa., shipped last week to New York a wire cable that is one of the largest in the United States. It was manufactured for the Columbus and Ninth avenue division of the Broadway cable line, and is the first of four ordered by that company. The rope is 31,800 feet in length and is $1\frac{1}{2}$ inches

in diameter. It is made from a high grade English crucible steel, every foot of which was drawn and tempered in the Hazard Works. There are six strands of 19 wires each wound over a hemp core, the latter forming a cushion and giving elasticity to the rope. The whole number of wires is 114 and the breakage strain is 112 tons. As the rope stands on its spool it weighs 125,000 pounds.

Casting Aluminum Bronze.

A paper on aluminum bronze read before the Virginia Beach meeting of the American Institute of Mining Engineers, by Dr. Leonard Waldo of Bridgeport, Conn., has just been published. In it he refers to the great difficulties experienced in casting aluminum bronze. He says: I believe them to be more serious and perhaps less understood than those encountered in the casting of any known metal. The large contraction which takes place in the actual formation of the pattern casting, and the so far unexplained and unknown chemical actions which occur, have called for ingenious and complicated devices for obtaining sound castings. So far we have hesitated about undertaking castings weighing over 2 tons, and, of course, those are small castings in comparison with the work done in steel works at present.

The aluminum seems to have a wonderful capacity for occluding hydrogen gas, and the liberation of this gas at the moment of the union of the aluminum with the copper, and the unknown relation which hydride of copper may sustain to the oxygen which exists in the pores, present difficulties which have still to be thoroughly studied. In this manufacture the purity of both aluminum and copper is of the utmost consequence. Those small percentages which almost defy the reagents of the analytical chemist become extremely important when one is working in the dark in regard to aluminum bronze. In making up our crucible charges we cannot depend upon the chemical formulae only because we must take careful account of the loss and the destructive combinations which take place between aluminum and silicon and iron. In a perfect ingot or casting the solution of aluminum bronze and copper seems to be perfect. The analysis from the top, bottom and sides shows no variation due to segregation. Of course, the mechanical mixture must have been made complete, so as to secure both the chemical combination and the uniform solution of it in excess of copper.

Belgian Wages.—Official statistics show that the average wages of the 2726 men employed in 1892 at the blast furnaces of Belgium were 2.92 francs (58 cents) per day. The product for 1892 was 753,268 gross tons. This, at 350 working days figures out 3.69 francs per ton, or say 74 cents per ton of pig iron. In the iron rolling mills, the 15,453 men average 3.16 francs (63 cents) per day. They puddled 530,938 tons of pig iron, and produced 479,008 tons of fine sheet iron. The steel works employed 3130 men at an average pay of 3.40 francs (68 cents) per day. The product was 260,037 tons of ingots and 208,281 tons of finished iron and steel.

The Meurer Bros. Company, Brooklyn, are adding two more tinning machines to their tin plate plant, making a total of eight sets.

Press Working of Sheet Metals.—VIII.

BY OBERLIN SMITH.

Redrawing.

Following the drawing process proper, as described in the last chapter, is the process of "deepening," "reducing" or "redrawing," by any of which terms it is frequently known. It depends in general upon the same principles, but differs somewhat in detail. The chief difference is that instead of drawing a comparatively shallow cup shaped article from a flat blank, it deepens the cups already made into other and deeper cups, at the same time reducing their diameter. In Fig. 112 is shown, in vertical axial section, a pair of dies for performing such operations. In Fig. 113 is a section of a cup shaped piece of work which, by the way, is often technically called a "cup" by the makers of cartridges and such like articles, its name after redrawing being a "shell." It has previously been drawn from a blank, and is placed in a recess in the lower die L, made to fit it, so as to guide it centrally into place. The upper die U is of such a diameter as to fit inside of it, the rounded corners at r and r , Fig. 112, being made of such curvature as to fit each other. Successive stages of the work as thus redrawn are shown respectively in Figs. 114, 115 and 116. The rounded corner of the drawing punch r' obviously governs the corner of the finished work, as shown by the same letter. After the first redrawing the deepened cup or tube can obviously be again drawn, with another reduction of diameter, and then again, and so on *ad infinitum*, within certain practical limits. These limits are chiefly governed by the condition of the metal, which tends to harden in more or less degree, just as it does with other forging operations. With iron, steel, brass, copper, &c., annealing is necessary after each two or three draws. With such annealing, however, almost any increase of length can be obtained, as is shown in the case of an ordinary cartridge shell, pen holder tube, or similar article. In the case of tin plate or other metal which cannot be annealed without spoiling the coating, not more than one or two redrawings can usually be made; and then the metal is apt to be so brittle near the edge, where most of the flow has taken place, as to render it unfit for other bending operations, such as curling, &c. By one redrawing it is practicable to obtain a tin plate cup or box of a depth about equal to its own diameter. Here, again, the proportions depend, of course, upon the quality of the metal and its thickness in relation to its diameter.

In Fig. 117 is shown a square steel box with rounded corners, as drawn in its first operation. In Fig. 118 is shown a second operation, as it was redrawn, and in Fig. 119 a third, making it into a complete elevator bucket. In this case the last operation was not, properly speaking, drawing, as the edge was trimmed and at the same time turned upward by being forced through a die, without reducing the diameter of the body, and, therefore, with no chance to use a blank holder. This is very difficult work to make—as the writer discovered some years ago when developing various sizes of these buckets, as a new article of manufacture.

In Fig. 120 is shown a pair of deepening dies, where the cup, Fig. 121, is

placed over the lower die in an upside down position. It is therefore turned partially inside out in being brought to the form shown in Fig. 122. In Figs. 123 and 124 are shown subsequent deepening, which will explain themselves. With plain shapes of this kind I have never been able to find out that there is any particular advantage in thus reversing the work, although in some cases it is desirable for special reasons. One disadvantage, where the reduction in diameter is small, is that the lower die must be thin, radially, and is therefore liable to burst should an extra thick sheet get in.

An amusing circumstance connected with this last named process is that after being in common use in various factories for a number of years, somebody patented it in this country. It is true we cannot expect the Patent Office offi-

ing" has here a very different meaning from that given it by the machinist, who applies it to the process of forcing a piece of metal through a lower cutting die, or pushing a punch through a hole, thereby shaving it down to a given size, and really performing an operation analogous to planing or slotting. In cases where he uses male or female broaching cutters, having a series of teeth following each other and each taking off its own chip, his work more nearly resembles milling. In relation to sheet metals the word means smashing the work thinner by forcing it through a space between punch and die which is too small for it. This in itself is, of course, very similar to some kinds of tube drawing, which again is the same as wire drawing, if we imagine the mandrel to be a part of the tube. In the case in question a reduction of di-

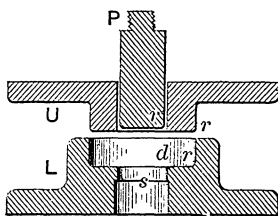


Fig. 112.



Fig. 113.



Fig. 115.

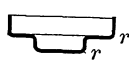


Fig. 114.



Fig. 116.

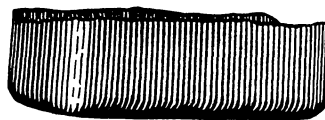


Fig. 117.

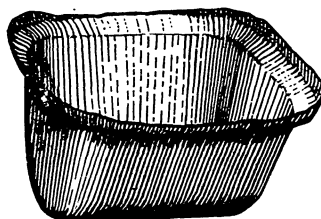


Fig. 118.

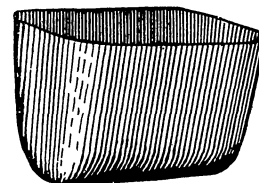


Fig. 119.

PRESS WORKING OF SHEET METALS.

cial to know everything that is happening in the world, but possibly an occasional tour, at the Government's expense, among such plants belonging to the great industries of the country as pertained to each visiting examiner's particular kind of work, would be an excellent investment of the people's money.

In Figs. 125 to 127, inclusive, are shown the different stages of the work performed in a similar die to that last described, but with the difference that the cup, Fig. 125, was left with a flange upon it in its first operation. This flange could not, obviously, be very wide, there being nothing to prevent its wrinkling as it gradually crawls upward upon the lower die. The process is sometimes useful with thick metals and small diameters to produce such work as Fig. 127 in the final operation.

A modification of a deepening operation proper is shown in Fig. 128, where the broaching process is combined with the redrawing. The word "broach-

iameter is being made at the same time as the thinning of the metal is taking place. This is much practiced in cartridge drawing, especially where it is desirable to keep the end or bottom of the work of the original thickness, as shown in the picture. When done, the bottom remains of as much greater thickness than the sides as happens to be required, and as has been arranged for in choosing the thickness of the sheet. In small work of this kind the use of a blank holder, or upper die, U, is abandoned after the first one or two draws, as the metal is reduced so little in diameter in proportion to its thickness that the wrinkles have no chance to form. Even if incipient wrinkles do form they are quickly crushed out again as the metal is squeezed somewhat thinner.

In some large work, such as various kinds of pans having considerable taper, a kind of upper die termed a vee blank holder is sometimes used in a redrawing operation. This blank



holder outside is of the same shape and size as the punch which drew the first operation, but is cylindrically hollow inside, for the punch of the second operation to pass through it. Thus the wrinkles are held from forming in a conical zone constituting the upper part of the body of the future completed pan, rather than in a flat flange, as is usually the case.

In Fig. 129 is shown the first operation (being ordinary drawn work) and in Fig. 130 the second operation of what is known as a "rim cover," such as is used for pots and other utensils. The bead or rim *a* has been bulged outward by the simple process of pushing the top down with a plain concave die, the lower edge of the metal being prop-

is usually performed by a spinning operation.

In regard to the kind of press best adapted for the deepening operations just treated of, it may be said that such a machine for many of the later operations is usually supplied with the single action ram, the chief characteristic being its unusually long stroke. Of course, where the stroke and power are sufficient any ordinary press will do, and no very great accuracy is required. In some cases such presses are made with an abnormally long stroke, arranged to adjust to any amount desired, after the method of a planer table, the ram being driven through the medium of a rack, screw or other suitable mechanism.

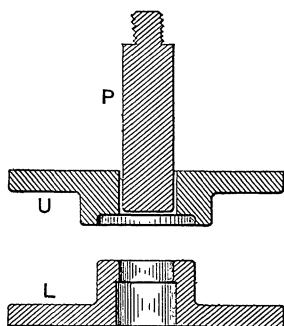


Fig. 120.

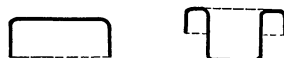


Fig. 121.



Fig. 122.



Fig. 123.



Fig. 124.

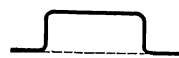


Fig. 125.



Fig. 126.

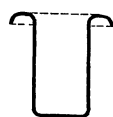


Fig. 127.



Fig. 128.



Fig. 129.

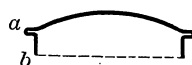


Fig. 130.



Fig. 131.



Fig. 132.

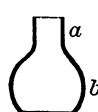


Fig. 133.

PRESS WORKING OF SHEET METALS.

erly confined in a lower die. This is, of course, not a process of drawing at all, but is simply given here to illustrate an interesting operation following the work of the drawing press.

Another useful after process applied to a deep drawn shell of comparatively thick metal of the shape of Fig. 131 is practiced by reducing the upper end and thus forming it into a metallic bottle, as in Fig. 132. This reduction is sometimes done entirely by spinning, but can also be done by a series of dies forced over the neck one after another, the body of the work being properly confined. Some cartridge shells are reduced in this way at the open end. In Fig. 133 is shown a somewhat similar reduction of the neck at *a*, together with the bulging out of a part of the body at *b*, thus forming a pitcher-like utensil, as shown. This bulging outward might possibly be done with certain forms of expanding dies, but

The future possibilities of the interesting process of drawing and redrawing metals seem to me very great. Much has been done in comparatively recent times in the way of developing the various operations involved. We can, even now, manage articles as large as soda water fountains and kitchen boilers, drawing them cold, by the processes above described, from ordinary flat sheets. To draw large steam boilers in the same way would be simply a matter of enormous first cost for the plant. Many irregular shaped articles are also now drawn, such as wheelbarrow bodies, sinks, mangers, &c. These processes simply need amplifying to produce bathtubs and boats. How large objects it will pay to attempt in this way I will not venture to predict. The commercial and mechanical sides of the question will no doubt, as usual, adjust themselves finally into a stable equilibrium.

Thin Films of Gold.

The *Journal* of the Franklin Institute states that one of the interesting exhibits made at the recent *conversazione* of the Royal Society, held June 18, 1894, was that of J. W. Swan, who presented a number of specimens of leaves of gold of extreme thinness, which had been prepared by the process of electro deposition. From a brief notice of the exhibit, published in *London Nature*, it appears that it represented an attempt by Mr. Swan to produce gold leaf by electro-chemical instead of mechanical means. "The leaves were prepared by depositing a thin film of gold on a highly polished and extremely thin electro-copper deposit. The copper was then dissolved by perchloride of iron, leaving the gold in a very attenuated condition. The leaves were approximately $\frac{1}{100000}$ inch thick, and some of them mounted on glass showed the transparency of gold very perfectly when a lighted lamp was looked at through them."

It will doubtless prove somewhat of a surprise to Mr. Swan to learn that identically the same method of procedure for the production of films of metal of extreme tenuity was described and illustrated by A. E. Outerbridge, Jr., in a lecture delivered before the Franklin Institute in 1877, an abstract of which was published in the *Journal*. At the stated meeting of the Institute held May 16, 1877, the then resident secretary, the late J. B. Knight, made reference in his monthly report to the thin gold films produced by Mr. Outerbridge in the following terms:

Transparent Gold—In the course of a lecture on gold, delivered before the Franklin Institute on February 27 last, A. E. Outerbridge, Jr., of the Assay Department of the mint in this city, gave an account of some experiments he had made with the view of ascertaining how thin a film of gold was necessary to produce a fine gold color. The plan adopted was as follows: From a sheet of copper rolled down to a thickness of $\frac{1}{10000}$ inch, he cut a strip $2\frac{1}{2} \times 4$ inches. This strip, containing 20 square inches of surface, after being carefully cleaned and burnished, was weighed on a delicate assay balance. Sufficient gold to produce a fine gold color was then deposited on it by means of the battery; the strip was then dried without rubbing and re weighed and found to have gained $\frac{1}{10}$ grain, thus showing that 1 grain of gold can, by this method, be made to cover 200 square inches, as compared to 75 square inches by beating. By calculation, based on the weight of a cubic inch of pure gold, the thickness of the deposited film was ascertained to be $\frac{1}{100000}$ inch, as against $\frac{1}{300000}$ for the beaten film. An examination under the microscope showed the film to be continuous and not deposited in spots, the whole surface presenting the appearance of pure gold.

Not being satisfied, however, with this proof, and desiring to examine the film by transmitted light, Mr. Outerbridge has since tried several methods for separating the film from the copper, and the following one has proved entirely successful. The gold plating was removed from one side of the copper strip, and by immersing small pieces in weak nitric acid for several days, the copper was entirely dissolved, leaving the films of gold, intact, floating on the surface of the liquid. These were collected on strips of glass, to which they adhered on drying, and the image of one of them is here projected on the

screen, by means of the gas microscope. You will observe that it is entirely continuous, of the characteristic bright green color, and very transparent, as is shown by placing this slide of diatoms behind the film. By changing the position of the instrument, and throwing the image of the film on the screen by means of reflected light, as is here done, you will see its true gold color.

Mr. Outerbridge has continued his experiments, and, by the same processes, has succeeded in producing continuous films, which he determined to be only the $\frac{2791000}{1000}$ inch in thickness, or 10,584 times thinner than an ordinary sheet of printed paper, or 60 times less than a single undulation of green light. The weight of gold covering 20 square inches is, in this case, $\frac{33}{1000}$ grain; 1 grain being sufficient to cover nearly 4 square feet of copper. As you see, the film is perfectly transparent and continuous, even in thickness, and presents all the characteristics of the one shown before. That a portion of the image appears darker is due to superposed films, the intensity of the green color being proportioned to the thickness through which the light passes. . . .

The New Ball Vertical Engine.

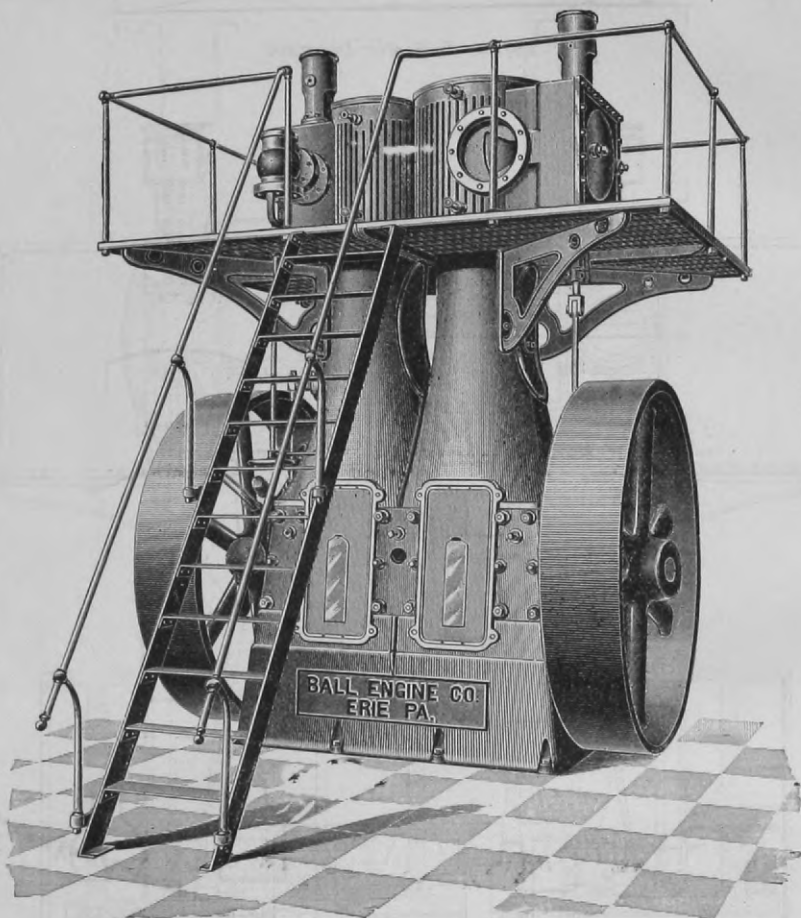
In designing this engine, the makers (the Ball Engine Company of Erie, Pa.) have taken advantage of their large experience of engine driving in electric stations, and have tried to place themselves in the position of station owners and operators.

It was desired to arrange an engine whose structure should be of such a form that the main pieces should be absolutely rigid and indestructible, and while having this feature allow ease of access for adjustment or removal of any part that is subject to wear; and while covering these points to produce an engine whose steam distribution is symmetrical on both sides of all the pistons, whether one, two, three or four are used; in other words, an independent valve motion for each and every cylinder employed, and each of these being a perfect engine in itself. By reference to the cuts, Figs. 1 and 3, it will be seen that the main proposition as to strength and indestructibility is covered in the symmetrical form of the upright housings, which are made to constitute one double housing by having one side of each planed and bolted together in the center of the middle shaft bearing. This substantiality is still further increased by the operation of planing the bottom of both housings to one continuous flat surface to meet the planed surface of the top of the single base plate to which the bottoms of the housings are bolted. The introduction of the shaft into this engine is accomplished by arranging the shaft boxes in a large jaw, cutting into one side of the housing deep enough to bring the center of the shaft in a plane with the center of the housing, finished spots being provided to meet correspondingly finished surfaces upon the cast iron boxes. These boxes consist of one lower, two quarter and one top box for each journal, and these are provided with removable babbitt metal shells upon which the journals bear. These shaft box jaws are in turn closed by the use of heavy struts or plates having on their inner faces a V-shaped tongue on each end which fits into a corresponding groove planed on each side of the jaw. These struts are fitted so that when bolted in

solidly by the four bolts in each the jaw is closed and completes the symmetrical strength of the four corners of each housing, each strut being fitted so that there can be neither contraction nor extension of the outer end of the jaw. Each housing is also pierced by the large rectangular opening on each side (shown covered by a door bolted on) as wide as the space between the inner edges of the struts and extending both high and low enough to allow the cranks with their counterbalancing disks to pass. Hence, with shaft, boxes and struts in place, to close up the engine it is only necessary to put up and secure large doors, which in turn are provided with a small shutter plate covering an opening large enough

end for the reception of the cylinders and the lower end for its seat upon the base. The other two sides of each housing are pierced by elliptical openings making easy access to the cross head and upper end of the connecting rod. With all of the above in view it will be seen that in adopting this form of housing a structure is obtained that is strong, convenient of access when desired, clean as to any dirt leaving the engine and entirely closed as to any dirt from the outside entering the engine, along with a natural ventilation past the shaft boxes up the column and out of the elliptical openings therein.

The shaft is of one piece of forged steel from end to end, the crank pins being 180° apart and cut out of the



THE NEW BALL VERTICAL ENGINE.

for the insertion of one's hand to feel the connecting rod strap when the engine is in motion and the necessary wrenches to key up the crank boxes when so desired. The adjustment of the journal boxes is accomplished by turning the three set screws shown in each strut—the two in the center reaching the quarter boxes, while the third one above operates either in or out a wedge which fills between the upper side of the jaw in the housing and the top box; thus giving independent adjustment for three parts of each box while the lower box is perfectly free to move at right angles to the axis of the shaft, thereby giving for all positions of adjustment of the quarter boxes a full bearing for the shaft.

Above the openings for the shaft the housing becomes a round taper column, having on two sides of its inner surface the cross head guide surfaces, which are cast in place and bored out coincident with the boring and facing of the upper

solid down to their round diameter, and, as are the journals, ground to a perfectly round smooth running surface. The pins are provided with centrifugal oiling holes in addition to the regular supply through the usual tube reaching from the upper to the lower end of the connecting rod. Covering each pair of crank bells is a pair of disks carrying a sufficient amount of counter weight to give a perfect running balance to the cranks and the reciprocating parts, so that there is practically no vibration to communicate to the housings and hence to the upper works of the engine.

The connecting rods are of forged steel, the upper end being solid and cut out for the reception of the brass cross head box and the removable cross head pin, the latter being very carefully tapered through the cross head and held in place by a fine threaded nut; the lower end being provided with an excellent design of strap, which, owing

to the arrangement of bolt and cross keys, constitute a solid end rod for the crank as well as the upper end, and both ends are provided with an excellent wedge adjustment which in opera-

been made exceedingly liberal. The piston rods are of crucible steel, screwed into the cross head. The stuffing boxes are adapted for the use of fibrous packing, unless otherwise ordered. The

ables the surfaces to take a mirror polish. They are provided with single valves, each of which is practically one piece so far as the motion and wear are concerned.

The high pressure valve is of the double faced telescopic relief type, with boiler pressure on the inside and sufficient amount of unbalanced area being left on the faces that the force of the steam on the inside forces the two faces apart, causing each to rub against the seat with sufficient force to keep the surfaces polished and steam tight through the entire life of the engine. The low pressure valve is of the common D type, with improved proportions and construction, is provided with a round relief area upon its back and operating against the chest cover, thus having a large well proportioned valve that runs with the greatest ease and yet follows up its wear without attention from the outside. In substantiation of the main proposition contained in the production of this engine, there is presented an indicator diagram, Fig. 2, which shows, the builders state, that where single valves of proper design are used the steam distribution can be made so perfect that it is simply folly to continue the chase after an ideal perfection that involves a vast amount of complication at an increase of first cost, maintenance and continuous attention, which is not justified by the results obtained. To state this in another way, the one great governing fact in the use of steam is recognized—namely, that a small leakage will more than destroy the useful effect of very elaborately worked out valves and motions. The makers have, therefore, confined themselves to the work of perfecting and simplifying the form of steam valve shown.

An instance in point showing the perfect control which a correctly adjusted governor may have when it has a good valve to handle is the following:

The engine is employed in electric railroad driving and is supplied with steam at 125 pounds gauge pressure, and exhausts into a practically uniform vacuum of 24 inches, and was driving at the time this test for total variation from standard speed was made 425 to 435 indicated horse power. To observe the variation a tachometer was attached to the main shaft. When all was in readiness and the full load was on, the switch controlling the whole current leaving the station was opened, thus dropping the entire load instantly, and the engine made a momentary flutter up to 235 revolutions and back again to 233 revolutions. The circuit was kept open while the attendant counted ten and was closed as suddenly as it had previously been opened, when the tachometer showed the engine making the same momentary flutter down to 231 revolutions and back again to 233, taking up instantly a load of about 400 indicated horse-power.

This test demonstrated that the governor was in isochronous adjustment, and that the valves were steam tight. Such perfect control of an engine of this magnitude is exceedingly unusual. This engine is guaranteed not to vary in speed from full load to no load, and *vice versa*, more than 1 per cent., hence as the test showed but eighty-six one-hundredths of 1 per cent., it was conceded that the guarantee was fulfilled in very good form.

The governor is made of the best materials, the points of severe contact being provided with hardened pins and renewal soft bushings, thus throwing the wear into those parts that are easily and cheaply replaced.

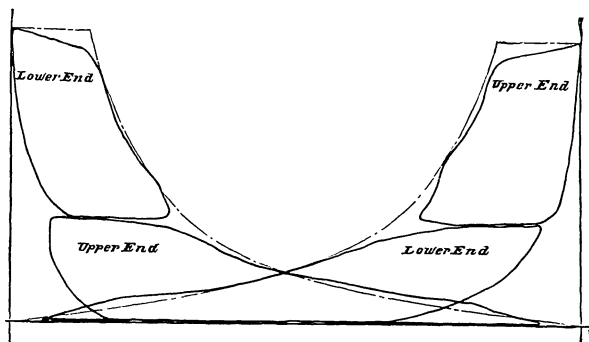


Fig. 2.—Indicator Diagram.

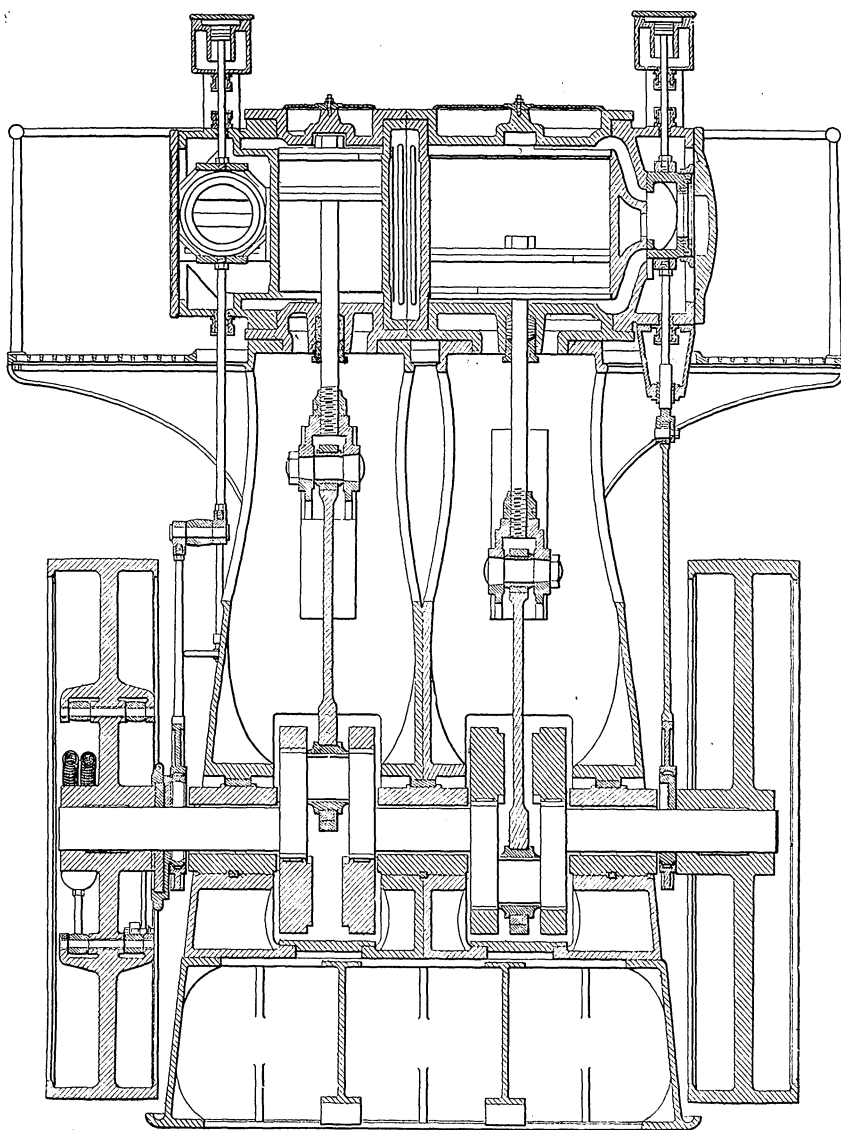


Fig. 3.—Vertical Section.

THE NEW BALL VERTICAL ENGINE.

tion does not alter the length of the rod.

The cross heads are of the double plate pocket type, as used in many makes of Corliss engines, and are provided with taper shoes to compensate for any wear that may occur against the guides, the shoes being of cast iron, with the running surface entirely covered with babbitt metal, the area of which has

pistons are of the double plate type, held up to a solid collar and taper by a well fitted nut. The piston packing is made up of two self adjusting parted rings and a broad junk ring for centering and guiding the piston in the cylinder. The cylinders are made of charcoal iron mixed in such proportions of hard and soft as to produce a very strong, close grained iron, which en-

The Bessemer Steel Industry and the Nail Manufacture.*

BY SIR HENRY BESSEMER.

Having learned that my previous communication on this subject to the *Engineering Review* has been acceptable, and having had evidence furnished to me of its having excited some interest on the Continent and in the United States, as well as in Great Britain, I have thought that it would be likely to add somewhat to that interest if I placed before your readers a diagram showing how the annual production of Bessemer steel throughout the world compares with some familiar objects of exceptional magnitude with which we are generally acquainted. For that purpose I have had pleasure in producing the diagram herewith, which compares the annual output of steel in all countries with St. Paul's Cathedral in London, with the London Monument and with a gasometer of the largest size. It will be seen that beside the solid column of Bessemer steel, all three of these structures are mere pigmies.

This graphic representation of such a column of steel is shown accurately to scale, and will aid the mind in more fully realizing the magnitude of the ponderous masses annually produced, every pound of which, during the brief period of its conversion into steel, has been raised to such an excessively high temperature as to become as brilliantly incandescent as the poles of an electric arc lamp.

It is this new material, so much stronger and tougher than common iron, that now builds our ships of war and our mercantile marine, that forms their boilers, their propeller shafts, their hulls, their masts and spars, their standing rigging, their cable chains and anchors, and finally their guns and armor plating.

This new material has covered with a network of steel rails the surface of every country in Europe, and in America alone there are no less than 175,000 miles of Bessemer steel rails binding together its widely scattered cities, and bringing them within easy commercial contact with each other. Over these long stretches of smooth steel road there ceaselessly run hundreds of thousands of steel wheel tires, impelled by hundreds of locomotive engines which owe their power and endurance to the same ubiquitous material, the great strength and elasticity of which, as compared with common iron, renders it especially suitable for the construction of our bridges and viaducts, steam boilers and machinery of every description, while its great resistance to wear and abrasion gives it a durability vastly superior to iron. In proof of this I may state that every steel rail now in use will bear at least six times the amount of traffic to pass over it that would suffice to wear out an iron rail. This question of durability is one of vast importance, for it has enabled companies to construct lines in localities where the rapid wearing out of iron rails would not profitably permit of their construction. The increased durability of steel will, moreover, be better realized when we consider that the 175,000 miles of steel railroads now built in America would have had to be broken up and laid with new rails six times, if the rails had been made of iron, during the period that the steel rails have lasted in a safe and workable condition.

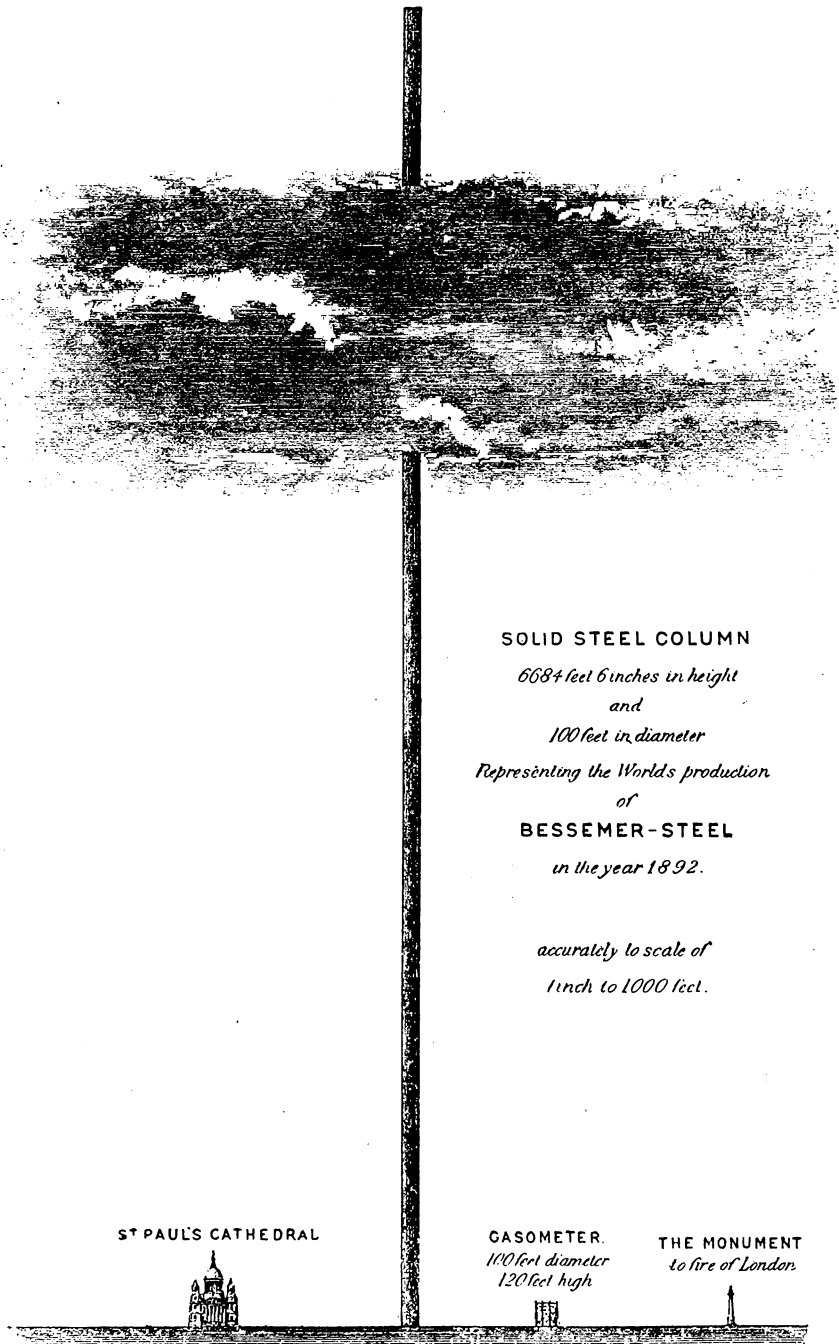
* From the *Engineering Review*

As a commercial question, it is impossible to form even an approximately correct idea of the value of this material when manufactured into the almost endless variety of useful articles to which it is now applied.

As a single instance, I may refer to the manufacture of steel nails. It is an important and well known fact that a steel nail can be driven into dry hard wood without boring a hole for it. This

ever made. Every form and pattern of nail was shown, from large spikes, 6 inches long, and weighing only ten to the pound, or 22,400 to the ton, down to the minute tacks used by upholsterers, and known as gimp tacks, so small that one ton of steel will make more than 14,000,000 of them.

I well remember how many thousands of people at the International Exhibition of that year passed heedlessly by these



property of steel nails results in an immense saving of labor, and in the United States, where so many houses are built of wood, it has proved of considerable value. I find from reliable statistics furnished by nail manufacturers, that in 1892 no less than 171,200 tons of unforaged nails and 139,900 tons of steel wire nails were made in America alone. Medium sized nails run from 80,000 to 120,000 to the ton, and I have before me some beautifully formed carpet nails with large flat heads, of which a single ton of steel will make 3,870,000.

It is an interesting fact that at the International Exhibition of 1862 I exhibited the first steel nails that were

germs of a new and important industry, apparently without the remotest idea of the future universal employment of steel in the nail manufacture.

Those who have passed through Wolverhampton and the "Black Country" a dozen years ago must have seen hundreds of young girls, sacrificing all the feminine hopes and aspirations of their young lives, and toiling from dewy morn till dusky eve in smoky, malodorous smithies, each girl with a pair of iron tongs holding the red hot nail in one hand, while with the other she showers upon it blows from the uplifted hammer in such rapid succession as to maintain the incandescence of the iron she is shaping, and the ceaseless din of

her fellow workers, who, with grimy faces and horny hands, are reeking in the heat and foul air of the nailer's den.

Time in this, as in so many other things, has wrought its wonted change, for to-day the inexorable power of steam, acting on unconscious matter, which suffers from neither heat, fatigue nor moral degradation, now yields from a single machine from 50 to 100 nails per minute, at less cost and of better quality than was ever wrung from human sinews and female degradation. The extent of the change thus made will be fully appreciated when it is known that the annual value of unforged steel nails now manufactured exceeds ten millions sterling (\$50,000,000). And I have often felt that if in my whole life I had done no other useful thing than the introduction of unforged steel nails, this one invention would have been a legitimate source of self gratulation and thankfulness in so far as it has successfully wiped out much of such a degrading species of slavery from the list of female employing industries in this country.

THE WEEK.

The first consignment, under the new law, of Canadian lumber, comprising 4,000,000 feet, was brought into Bay City, Mich., last week, being laid down in that port at a lower price than the Michigan lumbermen can get their home product to the same place by way of the railroads and rivers. The Michigan lumbermen say that wages for logging will have to go down considerably before they can continue their business at any profit under the new duties.

The County Commissioners at Omaha, Neb., have agreed in a proposition to vote bonds to the amount of \$1,000,000 to aid in the construction of the projected Platte River Canal.

In order to prevent a recurrence of the floods which devastated British Columbia last summer the Canadian Government have begun a survey of the banks of the Fraser River with the view of devising a system of dykes.

Most of the refineries of the Sugar Trust have been closed down on account of the large amount of refined sugar on hand. President Havemeyer of the American Sugar Refining Company states that the present price of sugar is below the cost of production, and that for some time past the company have been working the refineries at a considerable loss, statements which the public is not likely to believe.

Senor Zeballos, Argentine Minister in Washington, says that a remarkable stimulation of the wool industry of the Argentine Republic has resulted from the enactment of the new United States tariff law. He also states that new steamship lines are being projected to handle the increased trade in wool, which is expected to treble itself during the next 12 months.

A project is on foot for the construction of a trolley road from Philadelphia to Reading, Pa. A number of Philadelphia capitalists are said to have secured the necessary facilities.

What is understood to be the heaviest and the largest log of wood that has ever been shipped by sea was landed recently at Liverpool, England. It was brought from the West Coast of Africa, and weighed no less than 15 tons.

A board of army engineers has been appointed to prepare an estimate of the cost of deepening the harbors of Duluth and Superior to 20 feet.

The Argentine Minister at Washington is authority for the statement that an English syndicate has made a proposition to his government to build 3000 miles of railway, making a complete system through the interior of Argentina.

Again has the speedy Cunarder "Lucania" broken the Atlantic record. On her westbound trip, last week, she accomplished the trip from Queenstown to Sandy Hook in 5 days 7 hours and 48 minutes, beating the record—her own—by 50 minutes. The "Lucania" now holds all transatlantic records; namely, for the fastest trip east and west, the greatest single day's run, the greatest average daily runs and the greatest hourly average. The approach of the stormy term will probably put a stop to any further record breaking achievements for this season. Meanwhile the present year has seen the time of passage reduced by about five and one-half hours.

Last week's West Indian cyclone is reported to have done considerable damage to the cotton and rice crops in the middle and coast regions of the South. The Florida orange crop is also stated to have suffered severely from the storm. Happily, unlike the cyclone of a year ago, but little loss of life is recorded.

A Treasury statement which has been prepared, giving in detail the collections of internal revenue taxes for the past two months, shows that the aggregate of receipts from this source was \$51,924,878, against \$25,092,304 for the corresponding period of 1893. The large increase is entirely due to withdrawals of spirits from bond, in anticipation of the augmented tax. Nearly 40,000,000 gallons of whisky were thus withdrawn during the two months.

Paris dispatches intimate that the effort made there to dispose of the bonds of the reorganized Panama Canal Company has not proved a success.

The striking coal miners of the Massillon district of Ohio and the operators have agreed to submit the questions at issue between them to the decision of a local arbitration committee. Work is to be resumed at the mines at once, pending the results of arbitration.

The latest addition to the ranks of the "trusts" is that of the wagon wheel manufacturers, who have organized at Indianapolis under the name of the Commercial Wheel Company, embracing 90 per cent. of the product of the wagon wheel factories west of Pittsburgh. The various companies take stock in the consolidated company in proportion to the value of their plants, but their properties remain in separate ownership.

The condition of the export petroleum trade appears to be very active, judging by the following item extracted from a Philadelphia journal of last week: "A river of petroleum is now rushing from the oil country through the pipe lines to Philadelphia to load the largest fleet of bulk oil vessels that has ever been at that port at any one time. At least 15,000,000 gallons of crude and refined petroleum will be required to fill the orders now on hand for this particular class of vessels. There are twelve bulk steamships and two barks loading petroleum in Phila-

delphia on foreign account. The average cargo of a modern bulk carrier is 1,500,000 gallons. There are also large sailing vessels carrying oil which are principally owned in France. The shipments from the Philadelphia ports during the past week aggregated 5,075,008 gallons. The total shipments since January 1 have been 223,861,151 gallons. It is believed that this year's shipments will be the largest ever known in the history of this port."

The grand jury of the Criminal Court of the District of Columbia have returned indictments against the president and secretary of the Sugar Trust as a consequence of the refusal of those officials to answer questions put to them by the Senate Investigating Committee in June last.

The importation of cattle from Mexico is a new branch of trade which has been made possible under the recently passed tariff law. A herd of 1400 cattle was passed last week into Texas from over the Mexican border.

PERSONAL.

Courtenay de Kalb has been appointed professor of mining and metallurgy at Rolla, Mo.

Henry R. Towne of the Yale & Towne Mfg. Co., Stamford, Conn., was among the recent arrivals from Europe.

F. F. Sharpless, who has been connected with the Michigan Mining School and Horace V. Winchell, a well-known authority on the geology of the Lake iron ore regions, and on the Mesabara range in particular, have recently established a chemical laboratory in Minneapolis and have formed the firm of Sharpless & Winchell. They will act as consulting mining experts and metallurgists.

E. Windsor Richards, the famous English metallurgist, who was recently president of the Iron and Steel Institute, and is general manager of the Low Moor Works, is now on his way to this country.

John F. Wilcox of Pittsburgh, Mr. Mather of Cleveland, and Cyrus Elder of Johnstown returned from Germany last week. They spent some weeks in the investigation of coke manufacture with recovery of by-products.

J. J. Gray, well-known to the Western and Southern iron trade spent last week in Chicago. He is now operating the Big Stone Gap Colliery at Norton, Va., where he is building a coking plant and intends to make it an important factor in the furnace trade.

W. J. Taylor of Bound Brook, N. J., has just returned from his wanderings in Central America, Mexico and California much improved in health.

Samuel A. Croger of Philadelphia has returned from a European trip.

Naylor & Co. of New York announce that Artkur Holland has retired from their firm.

President Leeds of the American Tin Plate Company, Elwood, Ind., has returned home from a European trip.

The effect of the new Tin Plate duty on prices is already illustrated in the radical cut made by N. & G. Taylor Company, Philadelphia, of from 75 cents to \$1 25 a box in the quotations of the domestic Tin and Terne Plates manufactured by them, for delivery after October 1.

The Iron Age

New York, Thursday, October 4, 1894.

DAVID WILLIAMS, - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

The Movement of the Center of Maximum Efficiency in the Iron Trade.

There are probably few men connected with the manufacture of wrought iron and steel in the United States who have not given profound attention during the past year to a study of the position of their own locality as compared with other points. The prices at which crude and finished material have been put down in competitive markets have caused many a manufacturer to ponder deeply over his cost sheets and have led to much figuring over the possible minimum cost of the producers of rival sections. There may be a few who wave aside such uncomfortable calculations with the lofty conclusion that the aggressive sellers are losing money and that the present condition of affairs cannot last long. Of course, there can be no doubt that prices must return to a higher, more remunerative level. But it is noticeable that in the mean time the receiverships are not very numerous in some sections of the country, while they are abundant in others. The danger is that when prices get back to where they allow of a modest profit in one section they may be handsomely remunerative in others, and there new works and extensions will prepare subsequent years of agony to the makers in the weaker section.

Nor are some of the districts which are now so aggressively confident quite so far remote from danger. The Valleys make pig iron and steel cheaper than Pittsburgh, and it looks as though both sections will in the future find very uncomfortable competitors at Lake Erie ports. We know as a fact that one large steel producer on the lake is offering to enter into 20-year contracts with consumers of crude steel to secure their location, with the guarantee that soft steel is to be furnished to them at 60 cents a ton less than Pittsburgh prices. To large buyers of steel that represents a very respectable profit on their whole investment.

Costs have undergone such revolutionary changes during the past two or three years that older data are practically worthless. Still some general statement is admissible, since the facts are quite generally known throughout the trade. At present prices for ore and coke it is conceded that furnaces can run with Bessemer pig at \$10, on cars in the Valleys, and that \$15.50 for common 4-inch soft steel billets does not inflict any damage upon the steel mill.

Taking these as the base figures, every manufacturer can figure out for himself at what price he must be able to deliver his product or buy his crude material in order to maintain an existence.

It may be argued that the lowest cost prices of one particular section do not rule the great markets of this country, because it cannot supply the demand. It may be argued that the requirements are usually large enough to force consumers to call upon districts not so favorably located, and that such being the case they must pay prices high enough to induce such makers to run. It is true that temporarily such a condition of affairs may exist, and in fact that it is likely to occur. But it can only be temporary, because the favored sections will expand capacity until they secure a greater command of the markets.

We do not mean to convey the impression that \$10 pig and \$15.50 billets in the Valleys are the normal values, because they are not. They merely represent the economical minimum, with values for raw materials at an extraordinarily low level.

But discussions of this character do not refer to short periods. They bear on questions of policy affecting a decade, and in dealing with them a frank and safe investigation must reckon with minimum values. It is for this reason that we have noted the figures quoted. It is for this reason that every manager and stockholder in American works must study his own plant and location with them as basis figures. His interests are not safe beyond peradventure, in the future, unless he can get as close as possible to them. By many of our works the grave ultimatum must be faced whether fresh investments in plant and equipment can place money now in brick and mortar and in ponderous machinery within the limits of safety. If it can, then now is the time to make the necessary preparations, because they can be carried through at very low cost.

The question at issue has also a grave significance for the consumer of iron and steel in its cruder forms. If he depends upon local establishments engaged in an inevitably losing fight he may be imperiling his own future. It is possible that the cost of what is his raw material is so important an item that he may find himself beaten by rivals more advantageously located as to a cheap supply. In many instances the one disadvantage may be overbalanced by points relating to labor supply or to accessibility to markets. But it behooves many who are still indifferent to the tremendous struggle going on in the iron and steel trade proper to watch its developments very closely. It is rare indeed that they are so dramatic as to force themselves upon the attention of the casual observer. The latter is apt to miss the significance of gradual changes until the accomplished fact scares him into belated activity.

The Supply of Black Plates for Tinning.

The apprehension of a short supply of black plates west of the Alleghany Mountains, owing to the peculiar provisions of the new tariff act, was not well founded. If such a shortage does occur, it will be at some time in the future when the capacity of the dipping plants becomes considerably larger than it is at present. Offerings of black plates have increased instead of falling off. This is not due to the closing of tin plate factories pending the readjustment of wages, since contracts are sought for deliveries extending over long periods. Foreign manufacturers of black plates are soliciting business as well as the domestic makers, so that a supply from abroad is assured if it be found that American makers cannot meet the demand or ask higher prices than consumers can afford to pay. The fact appears to be established that the Welsh manufacturers are willing to sell their product in such form as may be desired by the peculiar conditions of the American trade. If they cannot sell their product as finished tin plate they will accept the situation and sell black plates. They do not propose to lose the opportunity to sell something, if they can only get the opportunity.

The willingness of the foreign manufacturers to take business of this character is shown by the alacrity with which they have offered consumers the full benefit of the reduction in duty. Instead of even slightly advancing their prices, under the impression that the American dippers needed to supply themselves from abroad and could stand a little squeeze, they have now gone somewhat further in the other direction and named lower rates. This has at least been done for delivery at Western points, easily reached by local manufacturers whose output has attained such proportions that they are obliged to solicit trade. In this respect a remarkable change has but shortly taken place, the output of domestic black plates having expanded so considerably that Western dippers are almost, if not entirely, receiving their supply from the home mills. This is the case notwithstanding the great increase in the output of the tinning plants. So confident now are the Western dippers that their interests will not suffer by reason of a shortage in the supply of black plates that they are adding to their tinning facilities. Mean while, the negotiations for a readjustment of wages in the American black plate mills are being watched with keen interest by all parties, as the sales now being made are evidently based on the lower costs which will prevail when the readjustment is effected.

The latent spirit of enterprise appears to be developing in a very encouraging manner in certain lines of business. New works are being undertaken, and extensions and improve-

ments are being made in old ones. It is noticeable, however, that this spirit of enterprise is confined to lines in which either an undoubted opportunity exists for an expansion of trade or owners of plants already built are confident that they can hold their own against any competition. Even among such concerns the impulse to progress was almost if not entirely checked by the financial troubles of the past year, but now that they have been safely passed the work of advancement can again be taken up. A great deal of capital is sure to be invested at no distant day in making improvements in workshops of all kinds in the introduction of labor saving appliances. Builders of machinery and devices of this character are receiving inquiries in constantly increasing volume from manufacturers who say that they must find a way to cheapen costs in order to retain their hold on the trade. A little further enlargement in the general demand, which will show that the future really has better things in store, will cause orders for such appliances to be placed which will considerably stimulate the engineering establishments.

The "Thunderer" has been delivering himself on the "decay" of the British iron trade in a manner which has aroused considerable interest in England. Although the facts have been repeatedly commented on by the English trade journals, the article in the London Times has reached the general public. The rôle of guardian and prophet of a great industry is of course very attractive to a journal like the Times, but it is hardly likely that the conditions which have brought about the relative and absolute decline of the English iron trade will be changed by the articles of a newspaper. The simple fact is that the leading civilized countries have developed their resources, and in some cases they have not alone ceased to be buyers, but have actually become competitors in neutral markets. The principal miners are the United States and Germany. We have not yet entered into the category of active rivals in distant territory, but we have until lately held for years the rank of greatest producers, wrenched from the English industry which held it so long.

Some English economic writers are now drawing what comfort they can from the fact that we have lost the position held since 1890 as the largest producer of pig iron. During the first half of 1894 there were produced in the United States 2,717,983 gross tons of pig iron, while the output in the United Kingdom was 3,708,270 tons. The glory of that achievement, however, promises to be short lived, since we are again running at a rate of over 7,000,000 tons per annum.

The tin plate works of Marshall Bros. & Co., 1156 Beach street, Philadelphia, are running with four sets on double turn.

Washington News.

(From our Special Correspondent.)

WASHINGTON, D. C., October 2, 1894.
New Torpedo Boats.

About the 15th inst. advertisements will be issued inviting proposals for the construction of torpedo boats Nos. 3, 4 and 5. The amount of money available for each boat is \$150,000, which is \$37,000 more than the contract price of the "Ericsson" (\$113,000). The provisions of the naval act authorizing the new boats require payment out of the appropriation for not only the bare hull and machinery, but outfit and armament. The law makes no reference to speed premiums. Should it be found that no speed premiums can be allowed upon them the contract price is likely to be greater.

Chief Constructor Philip Hichborn has nearly completed the designs of the new boats. In size and power they will closely resemble the "Ericsson" but will differ from it in internal arrangement and various details.

The following is a comparison of the general dimensions and allotment of weights:

located forward of the propellers. Foreign experience shows that maneuvering power is not impaired through such location. With the boat at rest it cannot be so effectively slewed by the wash from the propellers acting upon the rudder, but this effect would be small in this case if the rudder were directly aft of the propellers in the center line, and is of little value for a torpedo boat."

He added, "With the additional power and different model the speed of the new design should be at least $\frac{1}{2}$ knot greater than that of the 'Ericsson.' A closer estimate of the actual speed to be expected can be made after accurate trial results for the 'Ericsson' are available."

In the arrangement of the quarters it is proposed to place the quarters of the officers forward and those of the crew aft. There is sufficient room for the officers forward and owing to the broad water line aft the space for the crew is much more roomy and comfortable than if the opposite arrangement were adopted.

The speed of the "Ericsson" was rated at 24 and the new boats 24 $\frac{1}{2}$ knots an hour. The highest speed obtained by foreign boats of the torpedo class was 27 knots an hour, but not of the

Dimensions.

	"Ericsson."	New design.
Length on load water line.....	150 feet.....	160 feet.
Beam on load line.....	15.5 feet.....	16 feet.
Mean draft.....	4.75 feet.....	5 feet.
Displacement.....	120 tons.....	135 tons, about.
Indicated horse-power (est.).....	1,800.....	2,000.
Speed per hour (est.).....	24.....	24 $\frac{1}{2}$.
Coal capacity.....	40 tons.....	50 tons.
Armament.....	One bow tube..... One twin deck tube..... Four 1-pdr. R. F. guns....	Three deck tubes. Three 1-pdr. R. F. guns.

The model which has been designed for the new boats differs from the "Ericsson" chiefly in the adoption of the broad water line aft, to prevent excessive squatting. It is thought that the arrangement of three separate deck tubes is decidedly superior to the fixed bow tube and twin deck tube of the "Ericsson." Three 1-pounder guns have been adopted instead of four.

In reference to the machinery, the general arrangement differs from that of the "Ericsson" only in adoption of separate engine rooms. By this arrangement the chance of total disablement is materially reduced, and additional subdivision is secured, while the weight and space occupied are but little greater.

The allotment of weights in tons is:

	"Ericsson."	New design.
Hull and fittings.....	48.54	54
Engineers' weights.....	51.76	60
Ordnance weights.....	5	5.5
Coal.....	9	9
Boats, electric plant and miscellaneous.....	5.70	7
Totals.....	120.00	135.5

It is added that these estimates are subject to small variations as the details of the design are developed. In referring to the adoption of the broad water line, Chief Constructor Hichborn said:

"This arrangement is in accordance with the best present practice. The propellers have been placed as far aft as possible, this position being the most favorable for the utilization of their power. This required the rudder to be

size of the new American boats. That speed, it is claimed, can be reached or exceeded by American boats of the same size. With the exception of \$50,000 for a tug for service at Mare Island, these torpedo boats represent the sum total of the progress in naval construction authorized by the first session of the present Congress.

There has been some criticism of Secretary Herbert in newspapers for not detaching officers of the navy to witness the naval operations of the belligerents in the present war in the far East. It has been ascertained that this comment has been inspired by officers who are backed by potential influence, political and social.

Secretary Herbert, as intimated in The Iron Age last week, is not oblivious to the importance of availing ourselves of the practical experience to be obtained from a study of the behavior of the modern vessels and equipment in actual warfare. Special instructions have been sent to the admiral to make such details for special duty as the interests of the service might suggest. The Secretary says that it is not necessary to detail officers from home specially for that purpose when officers are on the ground and have been familiar with all the events leading up to the conflict.

The Department is now awaiting with much interest the official accounts from its own officers, which are always received in the usual routine of discipline, duty and regulations.

France derived \$190,000 last year from the new tax on bicycles, the number of wheels being 132,276.

OBITUARY.

WM. PENN TOWNSEND.

Wm. Penn Townsend, a retired member of the firm of W. P. Townsend & Co., manufacturers of rivets, at New Brighton, Pa., died at his residence in that place last week after a lingering illness. Mr. Townsend was born in Pittsburgh on April 13, 1817, and in 1828 his father began the manufacturing business in Fallston, Pa. When Mr. Townsend became old enough he took charge of the business, where he remained until 1852, when his father died. He retired from the firm of Wm. P. Townsend & Co. in January of this year in favor of his sons, E. P. and C. C. Townsend. Mr. Townsend was 77 years of age at the time of his death.

LUCIUS W. WESTLAKE.

Lucius W. Westlake, general salesman of the New Castle Wire Nail Company, died of typhoid fever at New Castle, Pa., September 14, aged 43 years. He had been connected with the nail company, with the exception of a few months, since they began business six years ago. While East on a visit with his wife late in July last he was taken ill and returned home immediately. He was well known throughout the South and West, and had also some acquaintance with the trade in the East. Last year he married the sister of J. P. H. Cunningham, treasurer of the company.

The monthly statement of through overland tonnage from the Pacific Coast for the month of August, compiled by the Southern Pacific Company, exhibits the marked improvement in business which has developed lately in that section. The details, in tons, are given as follows:

Source.	August.	Eight Months.
San Francisco.....	36,022	167,309
Oakland.....	3,093	10,594
Sacramento.....	29,065	75,825
San Jose.....	3,564	16,163
Stockton.....	4,760	21,686
Marysville.....	3,269	8,020
Portland.....	3,394	8,478
Total.....	83,207	308,080
Same time in 1893.....	49,917	235,101
Increase.....	33,290	73,979

The rumors of a projected alliance between the United States Cordage Company and the John Good Cordage Company are authoritatively denied by the latter corporation.

The preliminary trial of the battleship "Maine" from the Brooklyn Navy Yard last week gave great satisfaction to the officials and contractors. Although in no sense a speed trial, being merely a private run, made for the satisfaction of the contractors, the trial indicated that the "Maine" will exceed the required speed of 17 knots on her official test during the present week. The contract requirement is that the engines shall develop at least 9000 horsepower, a premium of \$100 being given for every additional horse-power over that figure.

English newspapers print the following in reference to the third ordinary general meeting of the Babcock & Wilcox, Limited, which was held under the presidency of the chairman, Andrew Stewart. The chairman said: "We have paid to the shareholders for the half year ended December 31 last an interim dividend of 10 per cent. on ordinary shares and 6 per cent. on prefer-

ence shares, which absorbed 10,000%. We now propose to pay 15 per cent. on the ordinary shares and 6 per cent. on the preference shares, which will take 13,500%, the total dividend payable for the whole year being 23,500%. In addition, we propose to write off the sum of 14,058*l.* 11*s.* 1*d.* for purchase of business, plant and patents account, and to carry to the credit of next year the sum of 9,137*l.* 18*s.* 2*d.*

The United States Circuit Court of Appeals in Chicago, on October 1, reversed in part the famous decision of Judge Jenkins in the case of P. M. Arthur and others against the Northern Pacific Railroad, in which the judge decided that employees had no right to strike under certain conditions, chief among which was when there was intent to injure the property or business of their employers. The decision of the Court of Appeals, prepared by Justice Harlan, rules that courts of equity are not competent to enjoin one man from quitting the personal service of another, that being the natural and legal right of every man. At the same time the decision holds that strikes must be of an entirely peaceable character. The following is the text of the decision on this head: "It is one thing, however, for a single individual or several individuals, each acting on his own responsibility, to quit work and quite a different thing in the eye of the law for many persons to combine or conspire together with the intent not simply of asserting their rights by peaceable methods, but of employing their united efforts to injure others or the public. It seems entirely clear that any combination or conspiracy on the part of these employees would be illegal which had for its object the crippling of property in the hands of receivers either by disabling property, by obstructing the control or management of the property, or by using force, intimidation or wrongful methods against employees remaining in the service to induce them to quit the service. Combinations of this character disturb the peace of society and are mischievous in the extreme. The Circuit Court therefore properly framed its injunction so as to restrain all acts specifically mentioned. We are of the opinion that the civil court properly refused to strike from the writs of injunction the words, 'And from combining or conspiring to quit the service of receivers with the object of crippling the property in their custody.'"

A new iron steamship, the "Lebanon," which has been building for the Reading Railroad at Cramp's shipyard in Philadelphia, was launched on September 29. The "Lebanon," which is the two hundred and eighty-second vessel built by the Cramps, is 249 feet long on the load line, and 258 feet 10 inches over all. Her machinery consists of triple expansion surface condensing marine engines, with direct acting inverted cylinders, working on cranks at angles of 120°, of 1000 horse-power. The cylinders are 19 x 30 x 50 inches in diameter, with 30-inch stroke of piston. She is fitted with a large and duplex wrecking pump, and 80 feet of 8 inch suction hose for wrecking or fire purposes. The new vessel will carry 1600 tons of coal and 190 tons of fuel on a draft of 15 feet 1½ inches forward, 15 feet 11½ inches aft, and tow three loaded barges carrying 1500 tons each. She is intended for coal transportation service between Philadelphia and New England ports.

MANUFACTURING.

Iron and Steel.

The New Haven Rolling Mill Company, New Haven, Conn., have recently completed a new bar mill at their plant. The mill contains three train of rolls, and nearly the whole of the floor space will be controlled by Ridgway steam-hydraulic cranes. Ridgway & Son of Coatesville are at present making the outfit.

The American Tube & Iron Company, whose works are at Middletown, Pa., are making considerable improvements in their facilities for handling material in course of manufacture. They have adopted the Ridgway steam-hydraulic system of cranes, and are now installing some of them.

The mills in the Mahoning Valley, Ohio, are doing some export trade in bars and other shapes of iron, one concern in particular having quite a large trade in Canada.

The National Foundry & Pipe Works, Limited, Scottdale, Pa., manufacturers of cast iron pipe, expect to materially increase the capacity of their pipe foundry during the coming winter, and will probably more than double their present capacity. This concern do not at present make larger than 24-inch pipe, but expect to fit up an additional plant for making 48-inch pipe and the intermediate sizes. Negotiations are now pending with outside parties for the operation of the plant of the Charlotte Furnace Company, Limited, recently purchased by the first named concern, but it is not yet known whether the negotiations now under way will be successful.

The employees of the Edgar Thomson Steel Works and Blast Furnace, Bessemer, Pa., have been notified by the Carnegie interest of a desire to terminate the sliding wage scale now in force at these works. A new scale is proposed, which will make reductions on all classes of labor except common labor. Notices of the intention to terminate the sliding wage scale were posted in all the departments of the plant last week, and stated that the company will be ready to present the new scale for the consideration of the men by November 15 next. It is to go into effect on January 1, 1895. Since the long strike at the Edgar Thomson Steel Works in 1892 the present sliding scale has been in force. It contained a proviso, however, that either party to the agreement could terminate it after giving 30 days' notice of such intention. The company have respected this proviso by giving 49 days' notice.

Last week the Oliver Iron & Steel Company of Pittsburgh swore out warrants for the arrest of three strikers who were charged with assaulting some of the puddlers of the firm who were working under the reduction to \$3 75 per ton for boiling.

The annual meeting of the stockholders of the Canonsburg Iron & Steel Company of Pittsburgh, with works at Canonsburg, Pa., was held in Pittsburgh last week. A statement was read to the stockholders, showing the concern to be in excellent financial condition. Last year about \$25,000 were expended in improvements on the plant. At present over 200 men are on the pay rolls, and upward of \$100,000 per year are paid out in wages. The old Board of Directors, consisting of Samuel Munnell, W. H. Paxton, John J. Budke, Louis Meyran, Mrs. Charles Meyran, H. H. Neimann and William A. Scott, were unanimously re-elected.

A number of important improvements in the plant of the Cleveland Steel Company, successors to the Britton Iron & Steel Company, Cleveland, Ohio, have been made during the past few months. In the light plate mill, which is now in operation on single turn, the two heating furnaces are fired with oil on a new principle, which thus far has given entire satisfaction. The temperature of escaping stack gases has been registered at 520°, a result that is regarded as quite satisfactory. On leaving the furnace the slab is carried to the rolls by an automatic chain table, the operation of which is comparatively noiseless and inexpensive. All the manipulations of the plate at the rolls are directed by a single operator from the top of the housing. The roughing mills are 26 inches in diameter. The middle roll is stationary, and the special device originated by Manager John A. Potter makes it possible for the manipulator to screw down the top roll to the middle one and at the same time bring up the bottom roll. The rolls of the second stand, through which the finishing passes are made, are 32 inches in

diameter, excepting the middle roll, which is smaller. From the finishing rolls the plate is taken to a table and marked, then sent through the trimming and squaring shears. A buckling machine straightens out any buckles in the finished product and leaves a very smooth plate of excellent finish. The work of erecting two new sheet mills is in progress, and it is expected that these will be in operation in the next two or three weeks. The light plate mill is now turning out 22 tons in eight hours, the product ranging from $1\frac{1}{2}$ -inch to No. 18 gauge. The galvanizing department, located on the opposite side of the railroad from the plate and sheet mills, is not in operation at present, but negotiations are in progress for the construction of a way under the tracks, and a conveyor will probably be put in for the transfer of the sheets that are to be galvanized.

A number of citizens of New Lisbon, Ohio, are endeavoring to raise sufficient funds to secure the location in that city of a plant for the manufacture of tin plate. It is said that certain capitalists have agreed to locate there if the citizens will raise the amount of money they ask.

Last week notices were posted at the Homestead Steel Works, Homestead, Pa., to the effect that hereafter no passes for admittance to the works will be issued. In the future, persons desiring to visit the plant will have to obtain an order for admittance from the general offices in Pittsburgh. Another order recently put in operation at the above plant is that no employee who is over ten years of age is permitted to carry a dinner bucket, when going to work, beyond the entrance.

It is stated that the National Tube Works Company, McKeesport, Pa., have reduced their floating debt 40 per cent. for the year ending June 30. The debt was returned in 1893 as \$3,406,821.

The American Wire Nail Company, at Anderson, Ind., broke all previous records in their wire department in the week ending September 22. During the entire week 952 tons of finished wire was turned out. The banner night run was on Wednesday, when 200,400 pounds were turned out. Most of the wire was made into nails by the end of the week. The capacity of the nail mill is about 2500 kegs per day.

The Chicago Stamping Company of Chicago are putting in a Morewood pot, which was needed to bring the capacity of their tin plate plant up to the requirements of their factory.

It is reported that an eight-mill tin plate plant has been located at Converse, Ind., through the efforts of the Converse Land Company.

The Buckeye Mfg. Company, now removing from Union City, Ohio, to Anderson, Ind., have decided to enlarge their new plant and add a steel casting foundry. The buildings are 600 x 50 feet. The new addition will be 200 x 50 feet, and, like the others, of brick and stone.

The report is incorrect which is now in circulation to the effect that the East Chicago Iron & Steel Company are making extensive additions to their plant at East Chicago, Ind.

The Illinois Steel Company emphatically deny that they contemplate building a line of railroad to connect their Chicago and Milwaukee plants. They have not borrowed \$1,800,000 for this purpose, as reported, nor for any other purpose, having no need to borrow.

Concerning the published reports that preparations are being made to start up the Durham Iron Works, at Riegelsville, Pa., we are advised by Cooper, Hewitt & Co. that they are not at present considering the question of putting their Durham Furnace in blast.

The Cambridge Iron & Steel Company, Cambridge, Ohio, are enlarging their galvanizing plant and will double the present capacity. This concern are moving the Bayliss galvanizing machine from McDaniels & Harvey Company of Philadelphia, Pa., to their plant at Cambridge. They will also add two additional sheet mills to their plant in the near future.

All of the black plate and tin mills of the Aetna-Standard Iron & Steel Company, Bridgeport, Ohio, were closed down on Saturday, September 22, pending settlement of the wage scale. This firm state that it is simply impossible for American manufacturers to pay the prices on the old scale since the reduced tariff has become effective. The mills of this concern will remain idle

until the adjustment of this matter of wages is accomplished to their satisfaction.

The Junction Iron Company, Mingo Junction, Ohio, who purchased the interests of the Laughlin Nail Company, Wheeling, W. Va., in the Bessemer steel plant of the Laughlin & Junction Steel Company, Mingo Junction, Ohio, contemplate making some extensive improvements, the nature of which has not yet been fully determined.

The Marshalltown Iron & Steel Company, capital stock \$100,000, have been chartered to operate the sheet mill at Marshalltown, Del. The plant was first built in 1836, but it was not until 1880 that a steam mill was erected. This has been enlarged twice since, in 1884 and 1889. Its annual capacity is rated at 3000 gross tons.

The North Carolina Steel & Iron Company of Greensboro, N. C., have, it is stated, been reorganized on a sound basis. This is the plant built some time ago by the North State Improvement Company, composed principally of the officers and stockholders of the Cape Fear & Yadkin Valley Railroad Company, which recently passed into the hands of a receiver. On account of the financial difficulties of the railroad company work on the iron and steel plant was stopped. Recently the plant was inspected by Chauncey F. Black of Pennsylvania, president of the newly organized Southern Immigration, Land & Title Company, and that company having secured control of the plant, the reorganization has been effected and the furnace will soon be started up. The raw material will principally be obtained from adjacent North Carolina mines. The new president is Col. Julian S. Carr of Durham, N. C.

The spiegel furnace of the Passaic Zinc Company in Hudson County, N. J., will blow in next week.

A company has been organized at Atlanta, Ind., with a capital stock of \$150,000, to put in operation at once the tin plate plant of the Indiana Tin Plate Mfg. Company, now in the hands of receivers.

It is stated that New York parties will repair and operate one of the furnaces at Floodwood, Ohio, formerly operated by the New York & Western Coal Company of Columbus.

No. 2 furnace of the Sloss Iron & Steel Company, at North Birmingham, Ala., has blown in. The stack has been relined, the boilers repaired and other improvements carried through.

Two of the blast furnaces of the Tennessee Coal, Iron & Railroad Company will, it is stated, be started up within a few days.

Falcon Iron & Nail Company, Niles, Ohio, are erecting an additional sheet mill, with four furnaces.

It is said that the Rockbridge Furnace, at Goshen Bridge, Va., will be put in blast at an early date by the company controlling it, unless they succeed in leasing the plant.

The court has directed the receivers of the American Tube & Iron Company, Harrisburg, Pa., to pay 10 per cent. of all claims against the company. It is claimed that after this payment sufficient funds will remain to properly care for the plant and to operate it for the benefit of creditors and shareholders.

The Alliance, Ohio, plant of the American Steel Casting Company has started up after an idleness of four months. This plant was formerly operated by the Solid Steel Company.

The cut nail factory of the Laughlin Nail Company, Wheeling, W. Va., has been shut down temporarily, but will resume operations again within a short time.

R. Heckscher & Sons' No. 1 blast furnace, at Swedeland, Pa., was lighted on the 27th ult.

All departments of the Indiana Iron Company, at Muncie, Ind., are now in full operation.

Machinery.

Hooker-Colville Steam Pump Company, St. Louis, Mo., are filling a contract for the St. Louis Union Stock Yards, which they secured a short time since. It calls for one river pump, two boiler feed pumps, one brine pump and one blood pump.

The new foundry being erected by Morris, Tasker & Co., at the Delaware River Iron Works, is being equipped with the best and most modern appliances, under the supervision of Mr. Feldman, the mechanical engineer. The Ridgway steam hydraulic system of cranes has been adopted and the first of the machines is now being put in. This firm

expect to make all their cast fittings at the new foundry instead of at Philadelphia, as heretofore.

Jenkins & Lingle, Bellefonte, Pa., have opened an office at Philadelphia, at 1213 Filbert street, where they will conduct business in regard to sales of their Jenkins power hammers and other tools. The firm have just introduced their specialties into the Frankford Arsenal, the United States Government having recently placed an order with them.

The Toledo Bicycle Works of Toledo, Ohio, have recently organized and are now making some extensive alterations and additions to their plant. They have just closed a contract with the Lodge & Davis Machine Tool Company of Cincinnati, Ohio, for an outfit of machinery suitable for the manufacture of bicycles.

The Youngstown Car Mfg. Company, Youngstown, Ohio, recently made a large shipment of cars to Cuba.

Judgments aggregating \$15,000 have been entered against the Altoona Mfg. Company, Altoona, Pa., manufacturers of high grade engines and improved machinery. The First National Bank of Altoona, Pa., is an execution creditor on account of \$8000.

The Spicer Mfg. Company, New Philadelphia, Ohio, recently made a shipment to the Cleveland Rolling Mill Company, Cleveland, Ohio, of one of their improved nail cleaning barrels. This cleaner has a capacity of cleaning 20 kegs of nails at one time, and is therefore a great saving over the small barrel commonly in use.

Fraser & Chalmers of Chicago have just secured another large contract for engines to be used in the electric equipment of the lines of the West Chicago Street Railroad Company. It calls for three 2000 and one 1000 horse-power engines. The contract was secured in competition with a number of engine builders from various parts of the country.

The Dry Dock Iron Company of Bay City, Mich., are building an addition to their machine shop. The addition will be 40 x 50 feet in size, one story high. The company have a large number of orders on hand and find it necessary to have more room at once. New machinery has been purchased and is en route. The company have abandoned temporarily their plan of erecting a steel plant, foundry and pattern shop. They are still considering offers from outside places for the removal of the entire plant. The new buildings will not be erected at Bay City unless the company can interest local capitalists to an extent sufficient to increase the capital stock from \$60,000 to \$100,000.

Elijah H. Foote has been appointed receiver of the Buss Machine Works, at Grand Rapids, Mich., in accordance with a petition of Francis Letellier, trustee of a blanket mortgage.

The Stephenson Mfg. Company of South Bend, Ind., are letting contracts for a new factory building in addition to the present plant and will have it ready for occupancy in the course of a couple of months. The new building will be constructed of brick, two stories high, and will have a frontage of 100 feet with a depth of 63 feet. All of the company's special machinery for the manufacture of automatic lathe turnings, moldings, dowels, &c., will be placed in the new building and the old building will be used for the rougher work. The company are finding a liberal demand for their product and the new building is designed to increase facilities as well as a precaution against loss by fire.

Haberle, Strayer & Graham, machinists, at South Bend, Ind., are arranging to rebuild their shop, which was recently burned.

Ford & Donnelly, founders and boiler makers, of Kokomo, Ind., have added another line. They are now manufacturing tin plate machinery, and supplying new mills at Anderson, Atlanta, Montpelier and other points where new tin plate factories are starting up. They are also shipping to Pittsburgh.

The Wendler Machine Company of Carthage, N. Y., manufacturers of pulp and paper mill machinery, have contracted for a large addition to their works.

The Brooks Locomotive Works, at Dunkirk, N. Y., are extending their electric power system, in the introduction of which they have been pioneers. The latest installation provides power for operating the two overhead traveling cranes in the foundry and the 80-foot span overhead traveling

crane in the boiler shop. Electric motors will be used to operate the transfer table now moved by a steam engine, the machinery in the foundry for driving the fans for the cupolas, and for power for other work in that department which is now furnished by steam. This electric power will also be largely used in the boiler shop to supersede the steam power now operating certain tools, but will not be applied to machines where hydraulic power and compressed air are used.

The Gilson Mfg. Company of Port Washington, Wis., have started up their new foundry under very favorable auspices.

The Pennsylvania Machine Company of Philadelphia have just supplied a 50 horsepower boiler and a 30 horse-power horizontal engine to the Leidich Mfg. Company, Tamaqua, Pa.

Reeves Bros. Iron Company of Alliance, Ohio, will erect an addition to their plant this fall. The new building will be about 100 feet square.

The National Tool & Lathe Company, a Philadelphia concern, will establish works at Cohoes, N. Y., if sufficient inducements are offered.

The Globe Gas Engine Company will build a plant at Forty-ninth street and the Pennsylvania Railroad, Philadelphia.

The Rand Drill Company have begun the erection of a foundry in connection with their plant at Tarrytown, N. Y.

The Taylor-Rice Engineering Company, capitalized at \$55,000, have been chartered at Wilmington, Del., for the purpose of manufacturing machinery.

Lane & Bodley Company of Cincinnati, Ohio, are building a six-story addition to their machine shop, 147 x 40 feet in size.

The Anderson Foundry & Machine Company, Anderson, Ind., have lately shipped a number of tile machines to New Zealand. The concern are reported to be doing a large and increasing foreign business.

The Farrell Foundry & Machine Company of Ansonia are to put up a new structure for a roll and machine shop.

Last week a meeting of the stockholders of the James P. Witherow Company, engineers and contractors, of Pittsburgh, was held in that city for the purpose of determining what disposition shall be made of the works of the above concern, which are located at New Castle, Pa. This plant has been closed down for more than a year past, and as the fixed charges against it amount to some \$1500 per month, some of the stockholders have become dissatisfied, and express the belief that the works should be either started up at once or sold to best advantage. After a thorough discussion of the situation, it was decided to postpone any immediate action until negotiations now under way for the sale of a blast furnace in the South which this concern own has been effected, or it has been shown that the furnace cannot be sold to good advantage. In case the blast furnace in question is sold and some cash is realized on the sale, the works of the James P. Witherow Company will be put in operation. If a sale of the furnace is not effected it is not improbable that the plant will be offered for sale.

The Totten & Hogg Iron and Steel Foundry Company, Pittsburgh, Pa., manufacturers of tin plate, rolling mill and special machinery and engines, have lately closed a contract with the Griswold Linsed Oil Company of Warren, Ohio, for four machines for crushing seed. Each machine consists of five 16 x 60 inch chill rolls, placed one above the other, all complete with housings, bed plates, &c. The same firm have received a fifth order from the Irondale Steel & Iron Company of Middletown, Ind., for two 100-horsepower boilers, and orders for a number of rolls from the American Tin Plate Company of Elwood, Ind., and the Wright Shovel Company of Anderson, Ind.

An addition is to be built to the plant of the Cleveland Twist Drill Company, Cleveland, Ohio. The company have recently increased their force and hours of work.

The Cumberland Bay Works, capitalized at \$50,000, have been incorporated to manufacture machinery at Plattsburg, N. Y.

The E. P. Allis Company of Milwaukee, Wis., have been awarded the contract for two pumping engines for the Pittsburgh Water Works. They are to have a capacity of 12,000,000 gallons each every 24 hours, and are to cost \$169,000.

Hardware.

The Southern Saw Mfg. Company of Atlanta, Ga., operating under the firm name of Ohlen & Chaffee, have retired from business, and another company to succeed them has been incorporated under the style of the Southern Saw Works. Messrs. Ohlen and Chaffee will be employed by the new company. Isaac S. Boyd has been elected president.

After being idle since January last the Stewart Wire Company, Easton, Pa., commenced operations on Monday with a force of 50 men. If more orders can be secured the company will start a second mill and will enlarge the number of employees. The company have been reorganized and supplied with considerable working capital.

The Bristol Brass & Clock Company's (Bristol, Conn.) spoon department, employing over 200 men, has started on full time.

The Munger Bicycle Company, Indianapolis, Ind., are making an important addition to their plant.

The Kroder Brass Works, Staunton, Va., were badly damaged by fire on the 25th ult. The loss is estimated at \$30,000, with insurance of about \$10,000.

The Ennis Specialty Company of Troy, N. Y., have been incorporated. They will manufacture articles for household use. The capital is fixed at \$20,000. The directors of the new company are William J. Dykes and James C. Peck of New York City, and Jessie D. Ennis of Troy.

A meeting of the stockholders of the Lehigh Valley Emery Wheel Company, Weissport, Pa., was held at the office of the company on September 24. The following directors were elected to serve for the ensuing year: John Leisenring, L. F. Lentz, W. R. Butler, W. C. McCormick, Dr. J. G. Zern, L. E. Wills and John F. Zern. The officers elected were as follows: Dr. J. G. Zern, president; L. E. Wills, general manager and treasurer, and John F. Zern, secretary.

The Maine Mfg. Company of Fairfield, Maine, have completed arrangements for the removal of their business to Nashua, N. H. They will occupy what is known as the Sanders brick mill property on Sanders street. A force of men will be put to work at once to make extensive additions and alterations in the plant. Among the new buildings will be a main shop of three stories and basement, 120 x 50 feet, and storehouse, 120 x 50 feet. The company's principal business is the manufacture of refrigerators, but they also make window screens, lawn chairs, children's blackboards and several other articles of similar nature. The company at the start will employ 50 to 60 men.

The Salem Wire Nail Company, Salem, Ohio, have recently filled a number of orders for wire nails for export trade. They are erecting an addition to their plant, 100 x 40 feet in size.

The Hatch Cutlery Company of Buchanan, Mich., have arranged to build a foundry in connection with the existing plant. The new building will be 40 x 64 feet.

Sawyer Hardware & Supply Company, Pawtucket, R. I., are putting on the market a line of malleable belt hooks of the clinching and Wilson styles, also a full line of axe and hammer wedges. The axe wedges are put up one dozen in a box and labeled Sawyer's Perfection, and the hammer wedges are put up two dozen in a box under the same name.

The machinery, tools, stock, &c., of the Chapin Cutlery Company, Toledo, Ohio, have been purchased by Nichols Bros., Greenfield, Mass., the well-known manufacturers of cutlery and butchers' tools. The recently acquired plant will be moved to Greenfield at once, where the manufacture of steel handled table cutlery will be continued. Nichols Bros. will also utilize this machinery for making solid steel handles and hollow steel handles, which the Chapin Cutlery Company formerly made under the Moody patents. The plant includes a complete silver plating outfit and is thoroughly modern, having been established in 1890. This addition gives Nichols Bros. a capacity of 100 dozen a day, and it is expected to be running in 60 days.

Emil Weissbrod & Sons, Greenfield, Mass., manufacturers of advertising specialties in leather, such as pocket books, memorandum books, &c., are introducing a new specialty in the shape of fire proof asbestos safe paper and postage stamp holders. These wallets are made of canvas

lined with fire proof asbestos, which in the case of a safe going through a hot fire will keep valuable papers from being charred and made worthless from heat.

The Keating Wheel Company, Holyoke, Mass., are energetically pushing the sale of their bicycles. Their factory is running on full time and they are turning out wheels promptly and on short notice.

The Leavitt Machine Company, Orange, Mass., have bought the business of L. C. Barrett, Brattleboro, Vt., and removed the machinery to Orange, Mass., where they will continue the manufacture of the Barrett bevel square and the Barrett improved combination roller gauge, the latter of which has been on the market for some time. This department will be in charge of L. C. Barrett, who has manufactured the goods for several years.

The officials of Canyon County, Idaho, have just purchased a complete outfit of steel jail cells for the County Jail at Caldwell from E. T. Barnum of Detroit, Mich., well known as a manufacturer of wire and iron work.

The Fremont Knife Company, Fremont Shear Company, Fremont Cutlery Company, Fremont Mfg. Company and Fremont Bread Knife Company of Fremont, Ohio, have recently been incorporated, the second named company by L. H. Cress, Russ J. Christy, Charles Thompson, N. C. Sherwood and R. H. Rice, and the others by L. H. Cress, Russ J. Christy, C. H. Myers, N. C. Sherwood and R. H. Rice. All of the companies have been incorporated with a capital stock of \$5000. The Fremont Knife Company will manufacture knives. The Fremont Shear Company will make shears, scissors, tinners' snips, pruning shears, corrugated shears for metal roofing and foot and power shears for squaring metal sheets, &c. The Fremont Cutlery Company will manufacture cutlery of every description. The Fremont Mfg. Company will put on the market dies, presses and special grinding machinery for the manufacture of knives, shears, scissors, &c. The Fremont Bread Knife Company will manufacture knives especially designed for bread, cakes and pastry, the knives having a peculiar form and edge.

Trimont Mfg. Company, Roxbury, Mass., have within a few months put in a complete drop forging plant, and are now in a position to make in their own shops everything connected with the line of tools which they are putting on the market.

A. H. Watson & Co. are making preparations to establish a twine factory at Fayetteville, N. C.

Miscellaneous.

The Fairfield Copper Company, of whom we made note recently as putting up a large copper reducing plant at Monroe, Conn., are pushing the work with all dispatch. Most of the machinery is already upon the ground. It will be one of the finest plants of the kind in the country and equipped with the most improved machinery. The cranes for handling the converter, &c., are of the Ridgway type.

The New York Clearing House has recently contracted for what is unquestionably the heaviest vault work ever built in any part of the world. The specifications demand that five-ply welded chrome steel and iron, made by the Chrome Steel Works, Brooklyn, N. Y., be used in its burglar proof construction.

The Pittsburgh Bridge Company of Pittsburgh, Pa., have received a contract for an 800-foot steel trestle for the Akron & Cuyahoga Falls Rapid Transit Company. The same concern have the contract for an addition to the plant of the Pittsburgh Locomotive & Car Works, Allegheny, Pa. This will be a building 187 x 67 feet and will be of iron and steel. The new casting house for the Midvale Steel Company, at Nicetown, Philadelphia, under erection for some time by the Pittsburgh Bridge Company, is almost completed.

At a meeting of the stockholders of the Girard Stove & Foundry Company, Youngstown, Ohio, last week it was decided to increase the capital stock from \$30,000 to \$50,000. At another meeting held on Thursday, September 25, two additional stockholders were elected.

The New Castle Steel & Tin Plate Company, New Castle, Pa., have closed down their plant pending a settlement of the wage question with their employees. During the month of August and that part of September in which the plant was in operation, the output of black plates of the very

highest grade was the largest during any similar period since the concern started operations. David Elias, formerly superintendent of the Cwmfelin Tin Plate Works, Swansea, South Wales, has been superintendent of the above plant since August 1. Had a reduction in the tariff not interfered with the operations of the New Castle Steel & Tin Plate Company it was the intention of the firm to considerably enlarge their plant, but just at present they have decided to do nothing in the way of enlargement until the outcome of the wage question is definitely known.

The Adams Company of Dubuque, Iowa, manufacturers of light castings and stoves, have just finished up a large addition to their foundry at the foot of Third street. This addition is 28 x 140 feet, making their foundry 115 x 140, which is claimed to be the largest foundry in the State, employing over 50 molders. Their plant, including engine room, machine shop, wareroom and yards, covers almost an acre of ground and is very conveniently arranged. They are also building a new cupola, which is to be the largest in Dubuque.

The St. Joseph Bridge & Iron Company of St. Joseph, Mo., one of the largest bridge building concerns in that section of the country, filed a deed of trust on the 26th ult. to secure notes due the Sexton National Bank of St. Joseph, aggregating \$31,950. The notes are the property of Eastern creditors who have been pressing payment. Dr. J. M. Huffman was appointed trustee for the company.

The Lamar Iron Works, at Lamar, Mo., have purchased an interest in a new plow called the Howard and intend to enlarge their facilities for the purpose of manufacturing it.

At Vincennes, Ind., the plant of the Bell-Armistead Mfg. Company, manufacturers of soil and plumbers' pipe, has been burned. Loss, \$30,000; insurance, \$13,000.

The National Bolt & Nut Works of Reading, Pa., have announced a reduction in wages ranging from 5 to 15 per cent.

The Columbia Spring Works of Hammond, Ind., have started up a full force after several months' suspension.

A scheme is on foot for connecting all the principal cities of the Indiana gas belt by means of an electric railway. The Gas Belt Electric Railway Company have been recently formed for the purpose. The line will take in Anderson, Franklin, Elwood, Alexandria, Muncie, Fairmount, Kokomo and Jonesboro, and will also extend to Indianapolis.

The largest shipment of material ever made by the Bethlehem Iron Company for the navy was dispatched on Saturday, consigned to the Cramps' shipyard in Philadelphia. It consisted of a train of 21 cars and included one 17-inch barrette, a conning tower for the "Massachusetts" and five 18-inch side armor plates for the "Indiana," weighing 30 tons each. The "Indiana's" armor has all been shipped with the exception of two side plates.

The Northwestern Plow Association held their annual meeting at the Grand Pacific Hotel, Chicago, on the 20th inst. Officers were elected for the ensuing year as follows: President, J. Johnson of Madison, Wis.; vice-president, W. H. Perlin of Canton, Ill.; secretary and treasurer, C. W. Mitchell of Dubuque, Iowa.

New officials of the National Union of Iron and Steel Workers have recently been elected, as follows: George W. Lamoree of New Castle, president; Charles H. Phillips, vice-president; P. J. Mundie, secretary; M. H. Logue, treasurer. Trustees—Dan Ambrose, Thomas C. Brown of Massillon, and John Farren of Cleveland.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA. Pa., October 2, 1894.

The last quarter of 1894 is entered upon under somewhat more favorable auspices than any since the third quarter of 1893, although it must be conceded that the outlook is still far from bright.

The fact that consumption is increasing is a strong feature, and from the widely distributed sources from which it comes is fairly good evidence that it will continue. No single interest is particularly active, but every department contributes something, and as they all call for quick delivery, it indicates buying for requirements which cannot be postponed. These are likely to become larger in the near future, and as new operations begin to loom up, as they certainly will sooner or later, there appears to be good reasons for the opinion that a further improvement is more probable than a reaction.

Prices are unsettled, however, and it will require time to adjust them to the conditions which now prevail. Pig metal, with the exception of Bessemer, is close to the lowest figures ever recorded, and if any decline is possible, it is supposed that it will be in Bessemer.

Production of that grade is understood to be increasing, but Bessemer Pig and Bessemer Billets have so far withstood the most strenuous efforts of consumers to secure better terms, except to the extent of 50¢ and \$1 per ton respectively from their highest figures. Rolled Steel is very nearly down to the figures that were ruling when Billets were \$1 @ \$1.50 lower than they are to-day, and it is presumed that one must go up or the other go down, but in the meanwhile the strength of one and the weakness of the other are about equal.

The summing up of the whole situation therefore is about as follows: A larger volume of business, fairly good prospects of its being maintained, but an unsettled feeling in the matter of prices.

Pig Iron.—Sales have been on a larger scale than seemed likely two or three weeks ago, but August and September were unusually heavy months. So much was taken in August that a falling off was expected for September, but it maintained the record. An advance in freights was to go into effect in October, and a good deal of buying was probably done to meet that contingency, which however, is said to have been postponed. Whatever the cause, the fact is beyond dispute that prices made no improvement, and with a full supply of material in consumers' yards it is hardly to be supposed that the demand will be as heavy in October as it was during August and September. Furnaces are well sold up, however, so that the chances are fair for a steady market at unchanged prices. General quotations for Philadelphia and nearby points are about as follows:

Bessemer.....	\$13.25 @ \$13.75
Standard No. 1 Foundry X.....	12.50 @ 12.75
Standard No. 2 Foundry X.....	11.50 @ 11.75
No. 2 Plain.....	10.75 @ 11.00
No. 1 Soft.....	11.60 @ 11.75
No. 2 Soft.....	10.75 @ 11.00
Standard Gray Forge.....	10.50 @ 10.75
Ordinary.....	10.25 @ 10.25

Steel Billets.—Market quiet and at pretty nearly unchanged prices. Buyers show no special urgency to place orders at prices quoted by makers, although their stocks are running low and will need replenishment soon. October shipments are held at \$19, delivered,

and later dates \$18.50 @ \$18.75, but with the low prices obtainable for the product consumers consider \$18 as about all they ought to pay. Inquiries for good sized lots were on the market during the past week, but no agreement could be reached in regard to prices, and for the present buyers have withdrawn from the market.

Finished Material.—The demand is not as active as it was some time ago, but the mills are fairly employed on small orders that come in from day to day. There is an entire absence of large work, so that there is nothing of any account to fall back on in case there is a lull in the current demand. This applies to all descriptions of rolled material, and unfortunately there is nothing in sight likely to change the situation. Prices are very weak, and on good sized orders it is not difficult to secure concessions from nominal prices, which are about as follows, delivered:

Grooved Skelp.....	1.25¢ @ 1.30¢
Standard Refined Bars.....	1.20¢ @ 1.25¢
Medium quality.....	1.10¢ @ 1.15¢
Tank Steel.....	1.30¢ @ 1.35¢
Heavy Plates.....	1.30¢ @ 1.40¢
Shell.....	1.50¢ @ 1.60¢
Flange.....	1.60¢ @ 1.80¢
Angles.....	1.40¢ @ 1.50¢
Beams and Channels.....	1.50¢ @ 1.60¢

Old Material.—The demand is not quite as brisk as it was some time ago, but there is no change in quotations, which for lots delivered are about as follows:

Heavy Melting Steel.....	\$10.50 @ \$11.50
Light Melting Steel.....	8.00 @ 8.50
No. 1 Wrought Scrap.....	10.50 @ 11.50
Machinery Cast.....	9.50 @ 10.00
Wrought Turnings.....	8.00 @ 8.50
Cast Borings.....	6.25 @ 6.75
Old Iron Rails.....	11.50 @ 12.00
Old Car Wheels.....	9.50 @ 10.00

E. Meyer, formerly with Wm. R. Hart & Co., and more recently with George T. Barns & Co., has commenced business on his own account at 226 South Fourth street, Philadelphia, under the firm name of Meyer & Co., Iron and Steel commission merchants.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts., CINCINNATI. October 3, 1894.

The general tone of the market has been and still is easy for Southern Pig Iron, but not to the extent of warranting any lower quotations, for while the demand is mainly of a jobbing character, it has enlarged sufficiently to be encouraging, and the aggregate sales foot up about 20,000 tons for the week, although none of them were large, and seldom reached 1500 tons in any one lot. If there is any shading in prices it is on Soft Iron, which is in better supply, but factors do not acknowledge that prices are any lower. The cheapness of Bessemer Iron in Pittsburgh tends to make a weaker feeling in Southern Iron here. There have been liberal sales for Eastern shipments, for the proposed advance in freight rates on October 1 stimulated buying, but that has now been postponed until the end of the year. The indications are that the consumption of foundry grades of Southern Coke Iron is keeping fully abreast of the production, and if this is so there will doubtless continue to be a confident undertone to the market. Quotations are as follows:

Foundry.

Southern Coke, No. 1.....	\$10.25 @ \$10.75
Southern Coke, No. 2.....	9.75 @ 10.00
Southern Coke, No. 3.....	9.10 @ 9.25

Ohio Soft Stone Coal, No. 1....	14.50 @	15.50
Ohio Soft Stone Coal, No. 2....	14.00 @	14.50
Lake Superior Coke, No. 1.....	12.50 @	13.00
Lake Superior Coke, No. 2.....	11.50 @	12.00
Hanging Rock Charcoal, No. 1..	16.00 @	17.00
Hanging Rock Charcoal, No. 2..	15.50 @	16.00
Tennessee Charcoal, No. 1.....	13.00 @	13.50
Tennessee Charcoal, No. 2.....	12.00 @	12.50

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	16.25 @	17.00
Lake Superior Car Wheel and Malleable.....	15.25 @	15.75

Forge.

Gray Forge.....	8.75 @	9.00
Mottled Coke.....	8.50 @	8.75

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, October 3, 1894.

Pig Iron.—The sales of the week included several round lots of Coke Iron, and inquiries are still coming forward. The situation looks as encouraging as ever for future business from the standpoint of local makers. Somewhat higher prices are being asked, and instances are noted in which the advance is sustained. Conditions are such that at almost any time a marked upward movement is to be expected in this class of Iron. It must be borne in mind that the very low prices ruling here have been caused by purely local influences, and therefore a change of this kind can take place without any special relation to the condition of the Iron trade generally. A good demand is also noted for Softeners, but the trade in this direction has largely gone to Ohio Softeners. Some fair inquiries are in the market for Southern Soft Irons, but prices are held at comparatively high rates owing to the better demand for Southern Irons from other localities. Lake Superior Charcoal is still very quiet. This is due to the fact that Malleable Iron makers are taking increased quantities of Coke Bessemer for their purposes, which displaces very much Charcoal Iron. Quotations are given as follows for cash.

Lake Superior Charcoal.....	\$14.50 @	\$15.00
Local Coke Foundry, No. 1....	10.25 @	10.50
Local Coke Foundry, No. 2....	10.00 @	10.25
Local Coke Foundry, No. 3....	9.50 @	10.00
Local Scotch.....	10.25 @	11.00
Ohio Strong Softeners No. 1..	13.00 @	13.50
Southern Silvery, No. 1.....	.....	.....
Southern Silvery, No. 2.....	.....	.....
Southern Coke, No. 1.....	10.75 @	11.25
Southern Coke, No. 2.....	10.50 @	10.75
Southern, No. 1 Soft.....	10.75 @	11.25
Southern, No. 2 Soft.....	10.50 @	10.75
Alabama Car Wheel.....	17.50 @	18.00
Jackson County Silvery.....	15.50 @	16.00
Other Ohio Silvery.....	14.25 @	14.50
Coke Bessemer.....	11.25 @	11.50
Coke Malleable.....	10.50 @	11.25
Spiegeleisen, 20 %.....	.....	20.00

Bars.—The best sale of the week which has come to light is one of 500 tons of Car Iron. It was taken at a very low price. Offers for additional freight cars are in the market and still more are expected soon to be offered for bids. A larger demand for Car Iron is, therefore, among the possibilities of the future. Outside of this trade the demand has mainly been for jobbing lots. Prices are very weak on Bar Iron, and some sales have been made at as low rates as at any previous time in the year. The situation in this respect is so demoralizing that an attempt is being made to supply some kind of a remedy. Much interest is therefore taken in a meeting of the Bar Iron manufacturers which occurs at Indianapolis this week. It is hoped that something of benefit will develop as a result of this meeting. Prices on mill shipments of Common Iron from Old Rail mixture may be quoted at 1¢ @ 1.10¢, Chicago. While guaranteed Iron is a little higher and now stands at 1.20¢ @ 1.25¢, soft Steel Bars from

strictly Billet stock are firm in comparison with Bar Iron and prices range from 1.25¢ to 1.30¢, Chicago, for mill shipments of ordinary quantities. Store prices on small lots are quoted at 1.25¢ upward for Iron, and 1.35¢ upward for Soft Steel, but some jobbers are cutting these rates.

Structural Material.—The bridge works are well employed, and a good number of small orders for material for buildings are now being received. In every case buyers ask for hurried shipments. This gives the market an appearance of activity which is out of proportion to the volume of business transacted. Prices are a little stiffer, and quotations for mill shipments, Chicago delivery, are as follows: Beams and Channels, 1.50¢; Angles, 1.40¢ @ 1.45¢; Tees, 1.65¢; Universal Plates, 1.40¢ @ 1.45¢. Small lots of Beams and Channels from stock, 1.75¢ @ 1.90¢; Angles, 1.50¢ @ 1.60¢; Tees, 1.70¢ @ 1.80¢.

Plates.—Mill orders have been larger during the week. Some houses report their present tonnage up to their usual volume in ordinary times. Country consumers speak more encouragingly of the outlook for business, but at present the demand from stock is comparatively quiet. Mill shipments, Chicago delivery, are quoted as follows: Tank Steel, 1.40¢ @ 1.50¢; Flange Steel, 1.65¢ @ 2.10¢; Fire Box, 1.65¢ @ 5¢. Store prices are as follows: Iron or Steel Sheets, Nos. 10 to 14, 1.70¢ @ 1.80¢; Tank Steel, 1.50¢ @ 1.65¢; Flange Steel, 2¢ @ 2.15¢; Boiler Tubes, in carloads, 75 % off.

Sheets.—The mills appear to be completely loaded for October shipment and are quoting higher prices on orders for early delivery. Complaints are still heard of the inability of mills to make deliveries according to contract. Steel Sheets are particularly scarce. Mill shipments of No. 27 Common Iron are quoted 2.40¢, Chicago; Steel Sheets, 2.50¢, and Galvanized Sheets 75 and 10 and 5 % off. Sheet Copper stands at 14¢ base in large lots. Small lots of No. 27 Common Black Sheets from stock are selling at 2.40¢ @ 2.50¢; Galvanized Sheets at 75 and 5 % @ 75 and 10 %.

Merchant Steel.—Excellent orders have recently been secured from carriage manufacturers, who are now placing season contracts for Tire for the coming year. Sellers of Tool Steel report light business, although the volume is in excess of that of the same time last year. Machine shops, however, are not doing as much work as they should, and reports from mining districts are not very favorable for the consumption of large quantities of Tool Steel this winter. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery Steel, 1.50¢ @ 1.60¢; Smooth Finished Tire, 1.50¢ @ 1.60¢; Open Hearth Spring Steel, 1.75¢ @ 1.80¢; Bessemer Machinery, 1.40¢ @ 1.45¢; Bessemer Tire, 1.40¢ @ 1.45¢; Ordinary Tool Steel, 5½¢ @ 7¢; Specials, 10½¢ and upward.

Billets and Rods.—Mills are now supplied with orders for as much as they can possibly turn out in October. Beyond that the future is a little uncertain, but prices appear to be quite firm at \$17.75 @ \$18. Business in Wire Rods has been better and several sales of round lots are noted, one of 3000 tons. The local mills are now full of work for October. Prices are unchanged at \$24.50 @ \$25.

Rails and Track Supplies.—The situation in Steel Rails has improved to some extent and not only have fair sales been made, but inquiries are of a better character. A considerable tonnage is being entered for Light Rails. Some inquiries have come forward for next year's delivery, but railroads are not pressing such negotiations. They are evidently feeling the ground. If reports of the tonnage needed for next year for renewals by leading railroads are true there will be a very heavy Western business. Quotations are continued as follows: Standard Rails, \$25 @ \$27; Steel Splice Bars, 1.25¢ @ 1.35¢; Track Bolts, with Nuts, 2.10¢ @ 2.20¢; Spikes, 1.65¢ @ 1.75¢; Links and Pins, 1.65¢ @ 1.70¢.

Old Rails and Car Wheels.—Old Iron Rails have been sold by some railroads at \$11, and offers of considerable quantities have been made at the same price to other consumers which have not been accepted. Negotiations are under way which may result in important trades. Quotations range from \$11 to \$11.50, according to the view of the holders. Old Steel Rails are unchanged at \$7.50 for short pieces and \$10 @ \$11 for long lengths of selected Rails, which at present seem to be somewhat scarce. Old Car Wheels are in a little demand, with prices unchanged at \$10 @ \$10.50.

Scrap.—More business is doing in this class of material and prices are firm in this immediate locality. A united effort appears to be made by dealers to mark prices up. Dealers quote the following selling prices per net ton: Railroad Forge, \$9.50 @ \$10; Dealers' Forge, \$8.50 @ \$9; No. 1 Mill, \$7.50; Pipes and Flues, \$6.50; Axles, \$13 @ \$13.50; Heavy Cast, \$7 @ \$7.50; Stove Plates, \$5 @ \$5.50; Cast Borings, \$3.75; Wrought Turnings, \$5.25; Axle Turnings, \$6.50; Fish Plates, \$10.50 @ \$11; Horseshoes, \$9; Mixed Steel, gross ton, \$5.50; Heavy Melting Steel Scrap, \$7 @ \$7.50.

Metals.—Lake Copper in carload lots is now quoted at 9½¢. Casting Copper is stiffer, with carload lots quoted at 9½¢. Spelter is reported firm by Missouri makers, but buyers here are indifferent and not disposed to take up offers at 3.30¢, Chicago. Pig Lead has been dull the past week, with 3¢ still asked.

The A. Lieberman Iron Company have been incorporated to conduct the Scrap Iron business of the late Abraham Lieberman, at Chicago. The authorized capital stock is \$25,000, and the incorporators are Moses M. Lieberman, Isaac K. Lieberman and Jacob Pevinsky.

St. Louis.

(By Telegraph.)

Office of *The Iron Age*,
Bank of Commerce Building,
St. Louis, October 3, 1894.

Pig Iron.—The anticipated break in Southern Irons now seems unavoidable. The larger furnaces have for some time past refused to meet the low prices made by their smaller competitors, hoping that the latter would soon have their order books filled and thus be out of the market. This has not as yet resulted, and as consumers naturally deal with those who offer tempting prices, the smaller furnaces have been doing the business. This condition of affairs is now likely to be reversed and prices

are in danger of being shaded to a considerable extent. No. 2 Foundry and Gray Forge are the grades which now seem to be the weakest, \$10 and \$9 being the respective quotations for these grades. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$10.75 @ \$11.00
Southern Coke, No. 2 Foundry.....	10.00 @ 10.25
Southern Coke, No. 3 Foundry.....	9.50 @ 9.75
Southern Car Wheel.....	16.50 @ 17.00
Gray Forge.....	9.00 @ 9.25
Ohio Softeners.....	14.00 @ 14.50

Bar Iron.—The demand is not as heavy as last reported, although mills have sufficient orders booked to keep them comfortably employed for some time yet. Local jobbers report a fair trade only, at from 1.20¢ to 1.25¢, according to quantity. Mills quote 1.05¢ for carload lots, with the intimation that this price would be shaded if the specifications are desirable.

Barb Wire.—The season for Barb Wire is practically over and sales are now limited to moderate quantities. Prices are firmly adhered to and are quoted for carload lots as follows: Painted, \$1.75 @ \$1.80; Galvanized, 40¢ per hundredweight additional.

Wire Nails.—There is no improvement to note in Wire Nails. Jobbers quote \$1.15, while mills are reported to have sold in carload lots pretty close to \$1 per keg, f.o.b. cars East St. Louis. Trade is only moderately active.

Rails and Track Supplies.—The demand for Track Material is improving and in Splice Bars and Spikes a good trade is reported. We quote as follows: Steel Rails, \$26.50 @ \$27. Old Iron Rails unchanged, at \$11.

Pig Lead.—This metal is weaker than last reported and sales of several hundred tons are reported at 2.92½¢ @ 2.95¢. The better grades command 3¢.

Spelter.—The demand has fallen off somewhat and prices have suffered in consequence. Sales at the close to-day were made at 3.25¢, with a number of bids at 3.20¢, but without finding any sellers.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, Pittsburgh, October 2, 1894.

The week under review brought out no new features in the Iron and Steel trades. The volume of business is fairly large, but prices do not improve and on some lines are weaker. Pig Iron and Billets are being bought only for close requirements and prices show a tendency to lower values. Structural Material is in active demand, with prices ruling firm. Plates are in moderate demand, but do not show any betterment in prices. Bars are in fair request for small lots, but large orders are lacking. Wire Nail makers are endeavoring to strengthen prices and have made an arrangement with a Western mill by which its product has been removed from the market. There is too much Coke being made and prices are weak. One leading maker has taken the initiative by blowing out a considerable number of ovens. Summed up as a whole the Iron trade is not in satisfactory condition, and with winter coming on the future is far from being a bright one.

Pig Iron.—The situation is practically the same as noted last week. While the output is enormous, stocks at furnaces are light, but, if the present rate of production is maintained, are

bound to increase. The Steel works are the heavy buyers of Bessemer Pig, but they are buying only for close delivery and are seemingly willing to take chances on the future. Forge Iron is in light demand and prices are showing a weaker tendency. The demand for Foundry Iron is of a hand-to-mouth character, but prices show no change one way or the other. We quote as follows:

Neutral Gray Forge.....	\$9.85 @ \$10.00 Cash.
All-Ore Mill.....	9.75 @ 10.00 "
No. 1 Foundry.....	11.75 @ 12.00 "
No. 2 Foundry.....	10.75 @ 11.00 "
Bessemer.....	10.90 @ 11.00 "

We note a sale of 1500 tons of Bessemer at \$11.10, delivered, and 500 tons at \$11, delivered.

Billets.—There is a fair demand for Steel from the local trade, but the large buyers continue to purchase only for immediate wants and are willing to take chances on prices for future deliveries. The local mills have considerable Steel booked for October delivery and are rather firm in their views on prices. Billets for October delivery may be quoted at \$16.50 at maker's mill. For balance of the year delivery some mills would probably shade this price.

Ferromanganese.—We note a sale of 25 tons of 80 % foreign at \$50, f.o.b. cars Pittsburgh. It is not probable that the local maker will allow any considerable quantity of the foreign article to enter this market.

Plates.—The contract for Plates for the vessel to be built at West Bay City, Mich., referred to last week as being taken by a Pittsburgh mill, amounted to 800 tons. The general demand continues fair, but is confined nearly altogether to small lots. Prices have shown no improvement, and we continue to quote Tank Steel, 1.20¢ @ 1.25¢, in ordinary lots and 1.15¢ for desirable orders. We quote Flange Steel at 1.30¢ @ 1.40¢, and Shell at 1.25¢ @ 1.35¢, according to order.

Structural Material.—The general demand continues excellent and considerable bridge work has come up lately. Buyers are insisting on early shipments in anticipation of a break in the weather before long, which will retard outside work. Prices are firm and unchanged, and we quote as follows: Beams and Channels up to 15-inch, 1.25¢ for desirable orders, and 1.30¢ @ 1.35¢ for ordinary business. Angles and Universal Plates we quote at 1.15¢ @ 1.20¢, according to order, and Tees at 1.35¢.

Merchant Steel.—Trade continues very quiet and prices are a shade lower. Makers complain that jobbers are not placing orders and the outlook, both as regards volume of business and prices, is not very bright. We quote as follows: Bessemer Machinery, 1.15¢ @ 1.25¢; Open Hearth Spring, 1.50¢ @ 1.60¢; Open Hearth Machinery, 1.40¢ @ 1.50¢; Machine Straightened Tire, 1.50¢ @ 1.60¢; Sleigh Shoe, 1.50¢ @ 1.60¢; Toe Calk, 1.70¢ @ 1.75¢.

Muck Bars.—There is very little doing, and we make nominal quotations of \$18.75 @ \$19 for best grades, delivered at buyer's mill. We note a sale of 250 tons at the first named price.

Bars.—Shipments were quite heavy last week on account of the advance in freights, which went into effect on October 1. The general demand is fair, and while a good many inquiries are in the market, very few large orders are being placed. Prices show no material change and continue to depend largely

on the nature of the order. We quote Common Iron Bars at 0.95¢ @ 1¢, at mill, and Steel Bars at 1.05¢, with the usual extras.

Sheets.—The demand for Black and Galvanized Sheets continues heavy and mills are getting further behind in shipments. Prices are firm and in some cases where prompt shipments are guaranteed slight advances have been secured. No. 27 Common Iron Sheets are firm at 2.20¢ @ 2.25¢, and No. 27 Soft Steel 2.30¢ @ 2.35¢. Galvanized Sheets are also firmer in price, and as in Black Sheets, where prompt deliveries are promised slightly higher prices are being obtained. We quote at 75 and 10 % @ 75 and 5 % off, according to order and terms of shipment.

Skelp Iron and Steel.—We note a sale of 1000 tons of wide sizes of Grooved Steel Skelp made by a Pittsburgh mill last week. Prices show no material change and we continue to quote as follows: Grooved Steel Skelp, 1.05¢ @ 1.10¢; Sheared Steel Skelp, 1.15¢ @ 1.25¢; Grooved Iron Skelp, 1.25¢ @ 1.30¢, and Sheared Iron Skelp, 1.35¢ @ 1.40¢, less 2 % cash in ten days.

Pipes and Tubes.—No large orders have been placed during the week. The general demand continues excellent, and the firmer feeling in prices referred to last week continues. Several of the larger mills report that they have sufficient orders on hand to keep them moderately busy for the next month or two.

Wire Rods.—Some few sales are reported on the basis of \$23.50 at makers' mill.

Wire Nails.—Some important developments in the Wire Nail trade have taken place during the week. The Wire Nail Association held a meeting in Pittsburgh last week, and the subject of the present demoralization in prices was up for discussion. A Western mill has received the credit for being the leader in the low prices recently made, and arrangements were perfected with the concern in question whereby they agree to retire from the Wire Nail and Wire Rod trades for one year from October 1 for a money consideration. The base price of Wire Nails was fixed at \$1 per keg with the usual extras. The general demand continues fair, and the belief is expressed that the established price will be generally observed in the future. The Cut Nail trade is quiet, the demand being only fair. We quote Cut Nails at 85¢ at mill, with the usual averages.

Barb Wire.—The demand is not up to expectations and the fear is expressed that the fall trade will not be as large in volume as anticipated. It is understood that at the recent meeting of Barb Wire makers held in Chicago the price of Four Point Galvanized was fixed at \$2.10 Pittsburgh.

Connellsville Coke.—The output of Connellsville Coke at present is the heaviest in the history of the region, and as a result there is a surplus in the market and prices are none too strong. A leading maker blew out a considerable number of ovens last week, and more will probably be blown out during this week. For the week ending Saturday, September 23, there were 15,454 ovens active in the Connellsville region and only 2060 idle, the total estimated production for the week in question being 149,775 tons. We continue to quote Furnace Coke at \$1 per ton, but as stated above, prices are weak and very little is changing hands. We quote

Foundry Coke at \$1.05 to dealers and \$1.15 to consumers, all in tons of 2000 lb, f.o.b. cars Connellsville region.

After a continuous connection of 22 years with Naylor & Co., six years of which he was a partner, Arthur Holland retired from that firm on Saturday, the 29th ult. Mr. Holland will continue in the same line of business carried on by Naylor & Co., under the firm name of Holland & Co., with offices in Rooms 303-304 German National Bank Building, Pittsburgh, Pa.

Birmingham.

BIRMINGHAM, ALA., October 1, 1894.

The week has been devoid of any special features. Matters are looking dull mainly from the reaction from expecting too much. There is a good undercurrent of steady business activity. Orders are keeping well up with supplies and prices are maintaining a general firm basis. Yet the feeling of disappointment crops out because we are not doing better, though it is hard to say why we should, or what conditions there are existing to boom the Iron trade. To some it is surprising that in view of present conditions it holds its own as well as it does.

Pig Iron.—Sales are reported as moderate, though fully equal to furnace makes. Most orders are small, not exceeding 500-ton lots, few large orders being reported. One 2000-ton and several 1000-ton orders have been placed. Prices on all smaller orders are well kept up to quotations, as shown on original sales memoranda. There is no demand to sell beyond six months, most orders being less than three months. Quick shipments are in great demand, and furnaces are still pushed to supply certain grades for prompt shipment. There is little shading done, nor is any necessity for this indicated, contrary reports notwithstanding. Prices average as follows: No. 1 Foundry, \$8 @ \$8.25; No. 2 Foundry, \$7.50; No. 1 Soft \$7.50; No. 3 Foundry, \$7, steady; No. 2 Soft, \$7.25, scarce; Gray Forge, \$6.50.

Finished Material.—The market in Rails and similar material is reported as exceptionally dull in the last ten days, even inquiries falling off materially. The rolling mills report a fair demand for Iron and Steel products, fully equal to make, but no change in prices. No downward tendency is noticed. The demand is general for all classes of material. The Birmingham Rolling Mill is increasing its force every day to meet increasing demand for its product.

The rumors of very important changes in the Tennessee Coal, Iron & Railroad Company current for weeks past have culminated in published reports that H. F. DeBardeleben will resign the first vice-presidency and management of the company, that A. M. Shook will succeed Mr. DeBardeleben and G. B. McCormack remain in his present position as assistant general manager. Mr. McCormack has been identified with this company through all their various changes, and his exceptional business and executive capacity have made him invaluable to the company.

It is reported that the Pioneer Mining & Mfg. Company will open up their Coal mines and build a railroad to connect them with their plant at Thomas, Ala.

New York.

Office of *The Iron Age*, 98-102 Reade street, New York, October 3, 1894.

American Pig.—Buying in this market continues on a limited scale. The attitude of the makers of standard brands of Northern Irons is watched with some interest. The question is whether they will continue indefinitely the policy of holding prices considerably above those at which Virginia and Alabama Irons are selling. A good many good customers have been learning how to get along with a smaller percentage in their mixtures and others have been forced by competition to do away with it entirely. We quote standard brands \$12.50 @ \$13 for No. 1; \$11 @ \$12 for No. 2, at tidewater. Southern Iron, same delivery, \$11.50 @ \$12 for No. 1; \$11 @ \$11.25 for No. 2; \$10.65 @ \$10.75 for No. 3; \$10.90 @ \$11 for No. 3 Soft, and \$11.15 @ \$11.25 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$10 @ \$10.40.

Spiegeleisen and Ferromanganese.—Negotiations are pending on a large block of foreign Spiegeleisen. The struggle between foreign and domestic Ferromanganese continues in the markets west of the Alleghany Mountains, but thus far the latter has invariably taken the business, undercutting the bids of the importers. We quote nominally \$20.50 @ \$21 for 20 % Spiegeleisen, and \$48.50 @ \$50 for 80 % Ferromanganese, tidewater.

Billets and Rods.—Only a retail business is going. We quote nominally \$18.75 @ \$19 for Billets and \$25.75 @ \$26.25 for Wire Rods, tidewater.

Steel Rails.—Eastern mills have only made small sales of standard Rails. Objections have been raised by importers against the cost of delivery of foreign Rails at Gulf ports, given in a recent editorial in *The Iron Age*. We are told that the lowest price named f.o.b. West Coast ports is £3 10/. The freight to Gulf ports is given by one authority at 9/ @ 9/6, and by another at 8/. To this must be added banker's credit, charges and profit, so that paying duty the Rails cannot be laid down at \$25, but would cost close to \$28. Importers state, however, that they can control the business of the Pacific Coast, because the freight from England would only be about 12/, as compared with at least \$6 from Atlantic ports by rail.

Track Material.—We quote as follows for small lots: Spikes, 1.50¢ @ 1.70¢; Fish Plates, 1.20¢ @ 1.40¢; Track Bolts, Square Nuts, 2¢ @ 2.10¢, and Hexagon Nuts, 2.10¢ @ 2.30¢, delivered.

Manufactured Iron and Steel.—During the week an Eastern mill has captured the contract for the extension of the Metropolitan Life Insurance Company, involving about 1700 tons, of which about 1100 tons are Beams. The same mill has taken the material for the Fay Building and for the wool ware house. It may be noted that some of the mills, in self defense, are adopting the system of bidding direct for the entire erection of buildings, thus competing with the local Architectural Iron workers. Figures have gone in for the second power house of a local cable road, and there is other business pending. Plates and Bars are locally very dull. We quote: Beams up to 15-inch, 1.30¢ @ 1.50¢ for round lots; Angles, 1.30¢ @ 1.35¢; Universal Mill Plates, 1.25¢ @ 1.35¢; Tees, 1.50¢ @ 1.60¢;

Channels, 1.40¢ @ 1.50¢, on dock. Steel Plates are 1.30¢ @ 1.40¢ for Tank; 1.40¢ @ 1.50¢ for Shell; 1.60¢ @ 1.65¢ for Flange, and 1.75¢ @ 2¢ for Fire Box, and 2¢ @ 2.25¢ for Locomotive Fire Box, on dock; Refined Bars are 1.20¢ @ 1.9¢, on dock, and Common 1.10¢ @ 1.20¢; Soft Steel Bars are 1.10¢ @ 1.30¢; Scrap Axles are quotable at 1.30¢ @ 1.50¢, delivered; Steel Axles, 1.30¢ @ 1.50¢, and Links and Pins, 1.40¢ @ 1.60¢; Steel Hoops, 1.40¢ @ 1.50¢, delivered; Cotton Ties, 67¢ @ 75¢ for 45-lb bundle, tidewater; Machinery Steel, 1.20¢ @ 1.40¢; Toe Calk, 1.70¢ @ 1.90¢, and Sleigh Shoe, 1.55¢ @ 1.75¢, delivered.

Stock Warrants.—The American Pig Iron Storage Warrant Company report as follows under date of October 1:

Stock in yard August 31, 1894.....	Tons, 103,200
Put in yard for 30 days, ending September 30, 1894.....	1,800
Total.....	105,000
Withdrawn 30 days, ending September 30, 1894.....	2,200
Net stock in yard September 30, 1894.....	102,800

B. M. Jones & Co., 143 Liberty street, announce a reduction in the prices of Mushet Steel. They now quote R. Mushet's Special Steel 46¢ @ lb, and R. Mushet's Titanic Steel 19¢ @ lb.

Metal Market.

Pig Tin.—Prices have declined considerably in the face of fairly liberal purchases by jobbers and consumers, and considerable covering of speculative "short" accounts. As against 16.20¢ a week ago, 15.75¢ has been accepted for spot stock. October delivery went at as low as 15.70¢, November at 15.50¢, and later deliveries relatively as low. The decline was due chiefly to the weight of unusually heavy supply of Tin in sight. Official records place the visible supply for Europe and America on the 1st inst. at about 23,300 tons. They also make it appear that deliveries were remarkably large. This would warrant the inference that the invisible supply, otherwise stocks in jobbers' and consumers' hands, has increased considerably. Latest sales showed some reaction from the extreme lowest point. Spot realized 15.85¢, 15.75¢ was realized for October and 15.55¢ for later deliveries.

Copper.—Upward of 500,000 lb Lake Superior Ingot have been sold at or about 9½¢, for delivery during the balance of the year. A good business in Electrolytic at about 9½¢ has also been effected and liberal quantities of ordinary casting stock were placed at 9½¢. To some extent the business was speculative, but it is claimed that consumers were the chief buyers and that the proposed agreement of producers as to output has had nothing to do with the movement. At the present time 9½¢ for Lake Superior Ingot, 9½¢ @ 9½¢ for Electrolytic and 9½¢ @ 9½¢ for common casting stock would appear to reflect sellers' ideas.

Pig Lead.—The market has been somewhat softer and is rather weak in appearance at the present time. Several hundred tons of common domestic were sold at 3.15¢ @ 3.17½¢, and a considerable amount of foreign Lead has arrived for delivery on contracts made some time ago with the largest consumers. Exports have also made quite a good showing. It is clear, however,

that a surplus over home wants remains sufficient to keep the market in a rather weak condition.

Spelter.—Prices have weakened to the extent of about 0.10¢ lb . Ordinary Western brands are, at all events, offered now at 3.45¢ laid down here or at common point. The demand is tame and the market generally has a soft appearance.

Antimony.—Merely routine business has been effected and prices remain almost stationary at about 7 $\frac{1}{2}$ ¢ for Hallitt's and 9 $\frac{1}{4}$ ¢ for Cookson's, from store.

Nickel.—Prices range between 35¢ and 40¢ as to size of lot and delivery.

Aluminum.—The Pittsburgh Reduction Company announce the following prices on Aluminum Ingots in ton lots: No. 1 Aluminum, 98 % pure, in rolling ingots, 58¢; No. 1, 98 % pure, in ingots for remelting, 53¢, and No. 2, over 94 % pure, cast in ingots for remelting, 50¢ lb . For small lots, the prices are respectively 63¢, 60¢ and 55¢.

Tin Plate.—There has been rather more buying and also some improvement in the demand for both prompt and future deliveries. This has served to stiffen prices to the extent of about 5¢ box for 14 x 20 Plates from the lowest point recently touched. The market, however, does not show the spirit that was looked for, and, besides this, suffers more or less in tone from the generally known fact that supplies are large at English shipping ports. For prompt and near future delivery the following prices are quoted: Charcoal Tins: Allaway Grade, IC 14 x 20, \$4.20; IX 14 x 20, \$5; IC 20 x 28, \$8.40; IX 20 x 28, \$10; IC Melyn, &c., \$4.75; IX Melyn, &c., \$6.37 $\frac{1}{2}$; IC Melyn, &c., \$9.50; IX Melyn, &c., \$12.75; IC Lisvane, &c., \$4.25; IX Lisvane, &c., \$5; IC Lisvane, &c., \$8.50; IX Lisvane, &c., \$10. Coke Tins, Bessemer Steel, IC 14 x 20, full weight, \$4; 100 lb, \$3; 95 lb, \$3 72 $\frac{1}{2}$; 90 lb, \$3 65; IC 20 x 28, full weight, \$8.10; 200 lb, \$7.80; 180 lb, \$7.40; ICW 14 x 20, 100 lb, \$3 62 $\frac{1}{2}$; 90 lb, \$3.55; IC squares, full weight, \$4.20 basis; 100 lb basis, \$3.90 basis; Siemens Steel, IC squares, full weight, \$4.25 basis; 100 lb basis \$4 basis. Charcoal Ternes: M. F., IC 14 x 20, \$6; IC 20 x 28, \$12; Worcester, IC 14 x 20, \$4.30; IC 20 x 28, \$8 55; Dean, IC 14 x 20, \$4; IC 20 x 28, \$8; 100 lb, IC 14 x 20, \$3.90; IC 20 x 28, \$7 80; D. R. D. Grade, IC 14 x 20, \$3.85; IC 20 x 28, \$7.70; 100 lb, IC 14 x 20, \$3.75; IC 20 x 28, \$7 50.

No agreement having been reached between the tin plate and black sheet mills and their employees over the question of a reduction averaging 25 per cent. in wages, to go into effect on October 1, a general shut down has occurred. Advice received at the headquarters of the Tin Plate Manufacturers' Association of the United States, in Pittsburgh, are to the effect that the shut down is general, only two or three plants being in operation, and these are expected to close as soon as present contracts have been filled. Among the last concerns to close down was the United States Iron & Tin Plate Mfg. Company, Demmler, Pa., who closed their plant for an indefinite period on Saturday of last week. At present the outlook for a settlement of the wage difficulty is unfavorable, the manufacturers claiming that it is impossible for them to continue paying wages on the

old basis and compete with foreign product under the new tariff. A meeting of the above organization was held in Pittsburgh last week, but only routine business was transacted. The present wage dispute was not under consideration, as the manufacturers have not receded from the original position taken by them when the change in the tariff was made.

British Metal Market.

[Special Cable Dispatch to The Iron Age.]

LONDON, October 3, 1894.

Pig Tin prices have fallen to the extent of £1.15/ @ £1.17/6. Meanwhile the market has been irregular under the influence of syndicate movements. When the syndicate seemed to be buying other holders were very cautious, but lack of support subsequently and advices of heavy Straits shipments had a weakening effect. Purchases by consumers have been very fair at late rates, but the visible supply has increased about 2000 tons. The market to-day revived from the extreme lowest, closing at £71. 2/6 for prompts and £71 @ £71. 10/ for three months' futures.

Copper has been somewhat easier. A few sales of Merchant Bars were made at as low as £41. 5/ for prompt delivery. There has since been some improvement, due to American advices, but both consumers and speculators are reserved. Chili charters last half of September were only 600 tons. Spot stocks and visible supply decreased 315 tons. To-day the market has been quoted at: Merchant Bars, £41. 2/6 for prompt and £41. 10/ for three months' futures. Best selected English is about £44 @ £44. 10/.

Tin Plate has been dull, in the face of fair inquiry, buyers' and sellers' views on prices being considerably apart. Shipments have been heavier, however, and stocks at primal points are reduced considerably. It is not believed that prices will improve until these shipments have been disposed of to a considerable extent. Swansea quotations are as follows:

Bessemer Cokes, IC.....	10/3 @	...
Siemens Cokes, IC.....	10/6 @	...
J. B. Steel Cokes, IC.....	10/6 @	...
Dean Ternes, 20 x 28	22/ @	23/
Charcoals, IC.....	11/6 @	12/6

Pig Lead is still quoted at £9. 15/ @ £9. 17/6, and the market remains in rather poor condition.

Spelter is slow of sale, and prices are weak at £15. 7/6 for ordinary Silesian.

Large orders have been placed for Black Plate at £7. 15/ for Siemens, chiefly for delivery in Southern States. Pig Iron Warrants have weakened to 42/9 for Scotch, 35/10 $\frac{1}{2}$ for Cleveland and 44/3 for Hematite.

A new safety appliance, the invention of M. E. Boulton of Boston, was recently tried on one of the fast Pennsylvania Railroad passenger trains between Pittsburgh and New York. It consists of an arrangement to supplement the work of the Westinghouse air brake by

heavily sanding the tracks as soon as the brake is applied, and thereby enabling the train to be brought to a standstill at very short notice. It is said that the tests were very successful.

The Queen and Crescent Route have issued Supplement No. 9 to their Eastern rail and water pig iron tariff, effective October 1. The new rates supersede those published in *The Iron Age* of September 27:

To	From Dayton and Rockwood, Tenn.	Rising Fawn Ga., and Fort Payne, Ala.	Birmingham district.
Baltimore, Md. (rail and water).....	\$3.54	\$3.50	\$3.50
Boston, Mass. (rail and water).....	3.89	3.85	3.85
Boston (via Providence), Mass. (rail and water).....	4.54	4.50	4.50
* Jersey City, N. J. (rail and water to New York, and lighter from there).....	3.54	3.50	3.50
New York, N. Y. (rail and water).....	3.54	3.50	3.50
Philadelphia, Pa. (rail and water).....	3.54	3.50	3.50
Providence, R. I. (rail and water).....	3.89	3.85	3.85

* In addition to the above charge the cost is as follows: in lots of 50 tons and less, 60 cents per ton; over 50 tons, 50 cents per ton.

The War Department has approved of the plans submitted for the great railway bridge across the Delaware River between Philadelphia and New Jersey. The bridge, which will be built by the Pennsylvania Railroad Company, will be high enough to permit of the passage of ferry boats at all times and a draw will accommodate ships with the loftiest masts. Work will, it is announced, be begun on the new structure within a year.

Canadian advices indicate that the scheme for an elevated railroad for the City of Montreal is likely to receive the immediate approval of the City Council, a majority of the Aldermen being in favor of the plan. The scheme includes a railway bridge across the St. Lawrence from Longueuil to Montreal.

Having built an admirable fleet of modern war vessels, the Navy Department is now in straits for men to man them. The next Congress will have to remedy this deficiency if the "new navy" is to be properly utilized.

The city of Tacoma, Wash., has brought suit against the Tacoma Light & Water Company for \$1,000,000 damages, charging gross fraud in connection with the recent sale of their plant to the city.

"If it is borne in mind," says F. A. Scheffler in *Cassier's Magazine*, "that a 60-light incandescent dynamo, 12 years ago, was as expensive as a 300 light one is to-day, one can readily obtain an idea of the remarkable results brought about by competition and time. Not only were dynamos expensive, but the lamps and sockets also were scheduled at five times the present prices. Sixteen candle-power lamps cost \$1.25 each, and the guaranteed life was no greater than it is to-day at 30 cents. Key sockets were \$1 each, and were not so well made either as the socket selling to-day at 20 cents."

HARDWARE.

Condition of Trade.

THE RETAIL TRADE in many sections are apparently experiencing an improvement in their local business, which, while not bringing up the volume of trade to a normal average, is regarded as giving indications of a more satisfactory condition of things before long. Their orders are more frequent and better assorted than heretofore and remittances are usually sent with a good degree of promptness. There is a good deal of unevenness in the reports of manufacturers in regard to the improvement which is apparent in the business situation, some of them reporting trade much better than it has been and considerably in excess of last year, while the experience of others does not justify so favorable a report. The condition of business through the country at large as seen by representative jobbers is given in the following reports from our special correspondents in the principal markets. Prices do not as yet show any general improvement, and on many lines of goods are low and somewhat irregular.

Chicago.

(By Telegraph.)

The general Hardware trade is in fair shape in comparison with business during the first half of the year, but the demand is somewhat spasmodic, days of heavy business being followed by other days of comparative dullness. Some houses seem to be more favored than others. One instance is noted in which a jobbing house has been obliged to add an additional floor for shipping purposes, and during the week was obliged to work this department at nights to keep up to the inrush of orders. House Furnishing Goods and Tinware are in much better demand, but orders are still coming in mainly for broken lots. The Rocky Mountain States are buying more freely now than at any previous time this year. Some fine orders have come in from that section during the past fortnight. This indicates a much more confident tone among the merchants of the Silver States, and it is pleasant to note the improvement in that section. The Tin Plate situation is unsettled. Jobbers differ materially in quotations and it may be a week or two before they get together and the market becomes more strictly defined.

St. Louis.

(By Telegraph.)

The local jobbing trade never looks for any large business during this week, which is known as "Fair Week," as the city is always crowded with country visitors and little or no business is transacted. The month has opened up well and promises to keep up the record made for September, which was particularly gratifying. The demand for Tin Plates shows decided improvement, the lower prices acting as an inducement to push this line of goods. Cutlery is also active for the same reason. The Nail market is weak, and plain Wires continue to be offered at surprisingly low prices. A good trade is reported in Tire Bolts at the advanced prices. A favorable feature is the large number of stock orders which are being received. The demand for what are known as winter goods shows decided improvement, and everything in the way of Stove goods is being sold very heavily. Galvanized Iron and Sheet Iron are also good sellers, but the prices at which they are sold are surprising low. Collections are above the average.

Baltimore.

CARLIN & FULTON.—While according to the calendar but one month of the fall has passed, we may calculate that at least two-thirds of the season's business is done, nearly everything being anticipated now in trade, and the work that legitimately belongs to the autumn is sought after in the summer, while in midwinter we reach out after the business which should come in the spring.

The bulk of the Cotton State trade is over for a while, and we may expect a decrease in orders from that section until their stocks become broken again and the demand begins for spring goods. From the grain and mining sections trade, however, should continue with as much activity as can be expected with wheat at its present price and iron at such unprofitable figures; though aside from wheat the farmer has little to complain of, for the sales of all other cereals, poultry, butter, eggs and other products have been generally at paying prices, while nearly everything he uses, whether fertilizers, clothing, tools or implements, has declined almost in proportion to the reduction in wheat and corn.

There are but few changes in prices; at least, the declines are very rare, while, on the contrary, we hear of advanced prices on some few items.

The reductions justified by reduced tariff rates had been very generally discounted by the manufacturers, and the downward tendency has also been checked by an improved demand for goods.

The percentage of failures throughout the country is greatly diminished

as compared with a year ago, and conservatism in finances and trade seems the order of the day.

There is, however, one disturbing element yet in the atmosphere—the silver question. The defeat of a year ago seems only to have postponed the discussion to a future day, and it looms up in the political platforms of new parties in all directions.

This month the Association of Bankers from all over the United States meets in this city and it will prove one of the most important bodies ever assembled, for their efforts will be in the direction of settling the problem of the currency, and as there can be no sectionalism or partisanship in their consideration of the question, their deliberations will be of the greatest interest to the entire country.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—Trade continues fair and quite up to the standard as last reported. This, coupled with the hopeful signs seen throughout the country, is encouraging for the future. Salesmen are sending in frequent orders, not so lengthy as might be wished, but embracing a variety of goods.

The depleted stocks of the retailer one would think required immediate replenishing in order to enable the buyer to supply the demands which must follow later on. There is evidence, however, of the retailer being careful in his purchases in order to avoid any uncertainty in regard to payments.

Some manufacturers adjacent to our city report quite an improvement in trade. Others, however, state there is some little disappointment from what they had anticipated.

Prices remain without any immediate change and show a steadiness beyond what has been usual for the last few years.

Collections continue fair and less failures are reported in our immediate section.

Louisville.

W. B. BELKNAP & Co.—The volume of business is well sustained, though it seems hardly credible that the present immense output of pig iron should be absorbed when the railroads are making no extensions to speak of and little new work of any kind is going forward. The main effort seems to be to keep employed the equipments already existing and to put them in reasonably good shape. Of course the wear and tear in a country the size of ours and as populous is of no inconsiderable amount and means a steady business of itself.

The rolling mills are asking a little more for some kinds of iron owing to the advance in scrap, which is declared to be substantial and certainly not less than 50 cents per ton. It is next to impossible to use muck bar at anything like present prices and come out whole. So say the mills. More and more attention is being turned to steel;

hoops, bands, and the smaller shapes are being furnished in that, we take it, very nearly altogether.

There has been a fair business South, somewhat modified, however, by the extremely low price at which cotton rules. It looks at though the large production of gold last year, over estimates and over any previous year, should have an effect in staying the downward course of prices. It would unquestionably be a vast benefit could ample supplies of this precious metal be found. It would not then be necessary to count the "friends of silver" in Congress, for silver would take care of itself at the proper ratio.

Locally the shops are fairly well employed and there is more business than we have seen for some time, and less complaint of lack of employment for artisans.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—As predicted in our last note, fall trade opens quietly. Orders are numerous, but not large. Interior merchants are keeping their stocks in shape to meet immediate demands, and nothing more. Collections are fair; it is probable that October will show an improvement in this regard. Prices remain without change.

Omaha.

LEE-CLARKE-ANDRESEN HARDWARE COMPANY.—We have to report a substantial improvement in the movement of certain lines of Hardware during the past two weeks. The weather having developed with regular fall conditions, has materially assisted in adding additional life to the regular run of trade; in fact, we may state that the business situation has undergone a decided change for the better, and it may now be fairly assumed that the revival is reasonably permanent, in so far as it concerns trade in general, regardless of local influences which have retarded business more or less in certain sections of the West.

Orders continue to be small but numerous. The market is very steady as far as prices are concerned, and there are really no special features of any particular interest to note.

San Francisco.

MILLER, SLOSS & SCOTT.—As reported to you some time past, we have noted a gradual increase in business, which we can still observe. The character of this increase is not an increase in the size of orders, but rather in the number. Our country merchants are evidently buying little at a time, but more frequently than has been their custom. This state of affairs will naturally continue until our farming community can see better prospects ahead.

Though our crops throughout the State have been fully up to the average of previous year, the prices realized have been such as to leave the farmer unable to meet his bills. Many of our country merchants advise us that they are selling only for cash and buying nothing that they do not absolutely need. Under these circumstances it is certainly hopeful to note that the volume of business has increased. This increase is not noticeable in the builders' line. Building in this city has never been so dull, and in this line, too, we cannot look for improvement before spring.

Collections have been very good for the past month, money has been com-

ing in quite freely, and we have promises for a continuation of good payments. While it is usual in our farming section to expect accounts to drag a little during the summer, they generally are in a position at this time of the year to make proportionately larger payments, and these are now commencing to arrive.

Cleveland.

THE W. BINGHAM COMPANY.—Trade shows comparatively little if any change in the general situation since our last writing. Sales for the month of September, while not up to 1892, were considerably ahead of '93, and taking the comparative values into consideration, we are not at all sure but what there has been about as large a volume as to quantity sent out this September as there was in '92. There have been some changes in price. Manufacturers have gotten together on several lines and have made advances, which have been taken up at once by the jobbers generally. As there has been a tendency of late to cut the margin of profit very close, anything that can help to improve prices is eagerly sought for. The particular advance is noted on Stove Bolts, Tire Bolts and Screws. Other prices have remained steady. The retailers in this city report trade as only fair.

New Orleans.

A. BALDWIN & Co.—Business still continues to slowly improve, and it is assuming much larger proportions than it has for a number of months back. Orders are coming in very freely and the demand is not confined to any particular line, but merchants are purchasing a general assortment. In the building line business has been exceptionally good. Staples are not moving quite as freely. Taken as a whole, the situation is considerably brighter than we anticipated thus early in the season.

Notes on Prices.

Wire Nails.—The Wire Nail market is characterized by a perceptibly better tone than a week or ten days ago, and, as a result, prices are a little firmer. The market is represented by the quotation of \$1, at mill, for carload lots, a figure which is well maintained by the manufacturers. The improved condition is regarded as resulting principally from action recently consummated, by which the manufacturers hope to do away with, or at least diminish, a disturbing influence in the market, the effect of which has been felt for some time, as Nails have been offered at what appeared to be irregular and exceptionally low figures by parties operating in the interest of one of the mills. It is rumored, however, that the product of this mill hereafter, for a time at least, will be under the control of other manufacturers. Whether this will fully accomplish the desired end remains to be seen, especially if it should turn out that the parties whose operations are by the manufacturers given the credit of disturbing the market should be able, as they intimate, to supply themselves from another source, to accomplish which

they have leased and will operate a mill which has recently been inactive. On this point there is a good deal of diversity of opinion among well informed parties. The market, however, is undoubtedly in better condition than it has been, and the manufacturers are holding prices steadily. The New York price continues \$1.20 on dock and \$1.25 to \$1.30 from store.

Chicago, by Telegraph.—Manufacturers are now asking better prices, having evidently made some new arrangement during the past week which gives them a firmer basis of operation. It of course remains to be seen whether the disturbing influences which unsettled the market during the past month have been completely eliminated, but a much more confident tone is noted and a strong effort is certainly being made to get higher prices. Quotations on factory lots are about \$1.10, Chicago, and if this rate is maintained or advanced jobbers say that they will very shortly be obliged to advance their quotation of \$1.15 on small lots from stock.

Cut Nails.—The Cut Nail market is not especially active, but there is a fair volume of business, probably as large as should be expected in the general conditions of trade. Prices are unchanged, and are represented by the quotation of 90 cents for carload lots on dock, New York, with the usual average, while small lots from store are held at \$1.05 to \$1.10.

Chicago, by Telegraph.—Manufacturers report a much larger volume of business coming in from all parts of the Northwest. Orders are not much larger than they have been, but there are more of them. Factory lots continue to be quoted at 95 cents, Chicago, for 60-cent average. Jobbers quote small lots from stock at \$1.10 to \$1.15.

Barb Wire.—There is not much activity in the Barb Wire market and prices are unchanged, the tone of the market not being perhaps quite so strong as it has been. Four-Point Galvanized is quoted as follows: Pittsburgh, \$2 to \$2.05; Cleveland, \$2.05 to \$2.10; Cincinnati, Allentown, Chicago and New York, \$2.15 to \$2.20.

Chicago, by Telegraph.—Scattering orders are beginning to come in for spring delivery. These are welcomed as an indication of much larger business of the same character to be placed this month. Manufacturers have latterly been large purchasers of Wire Rods and are evidently looking forward to as large a business this fall and winter as ever. A little irregularity is noted among jobbers, but leading houses continue to quote \$2.30 for small lots of Galvanized from stock, with the usual allowance for carload lots. When shipments can be made direct from factory to buyer lower rates are quoted by jobbers.

The Handy Floor Jack.—This article was described in *The Iron Age*,

September 20, as put on the market by the Racine Malleable & Wrought Iron Company, Racine, Wis. The Jack is sold to the trade at \$10 per dozen net.

Fox Corrugated Side Steel Sash Pulley.—A description of this Pulley appeared in our issue 20th ult. The Pulley is being put on the market by the Fox Machine Company of Grand Rapids, Mich., and is sold to the trade at 25 cents per dozen net in barrel lots.

Parlor Door Hanger.—Lane's New Model Parlor Door Hanger, manufactured by Lane Brothers, Poughkeepsie, N. Y., for whom John H. Graham & Co., 113 Chambers street, New York, are agents, an illustrated description of which appears in this issue, is sold at a discount of 40 and 10 per cent. from the following list:

Per set (four Hangers), including 14 feet of track, gravity stops, striking and floor plates.....\$5.00
Per half set (two Hangers), including 8 feet of track and fixtures..... 2.50
Extra track, when ordered, per foot.. .09

One-Minute Dish Washer.—This article was described in our issue September 20. The Dish Washer is put on the market by the Bolgiano Mfg. Company, Baltimore, Md., by whom it is sold to the trade at \$60 per dozen, subject to a discount of 50 per cent.

Steam Clothes Washer.—Bolgiano Mfg. Company, Baltimore, Md., are putting this article on the market, a description of it having appeared in our issue September 20. The Clothes Washer is sold to the trade at \$6 per dozen, subject to a discount of 50 per cent.

Screws.—During the past week there has been a flurry in the Screw market owing to a projected advance, which though made known to many in the trade failed to materialize. In view of the unsatisfactory condition of the market and the low prices which have prevailed conferences were held by the manufacturers with a view to advancing the price and making the base discount 83½ per cent. instead of 85 per cent. as at present. It was thought that the way was clear for such advance and some of the manufacturers made announcement to that effect, but it was found that one of the manufacturers whom it was hoped would unite in the action did not deem it advisable to do so. As it was the understanding that the advance was on the condition that all the makers should unite, the project therefore fell to the ground, and those manufacturers who had made announcements of the change countermanded their advices to that effect. As a result the market has returned to its former condition without any change in prices.

Glass.—The American Window Glass market is in much the same condition as reported last week. The demand is fair for immediate consumption, but jobbers are buying sparingly. There is also a noticeable absence of any

speculative tendencies, as there is a feeling among the trade of uncertainty regarding future prices. It is reported that further declines in prices have taken place, and that in lots of 3000 to 5000 boxes quotations are made for cash of 88 and 2½ per cent. discount for single, and of 90 and 2½ per cent. discount for double strength Glass. New York importers of French Window and Picture Glass have adopted a new price-list, which went into effect October 1, and which we print herewith. There is a slight change in the arrangement of brackets and a reduction in list prices, which, the importers explain, was made to correspond to the change in tariff. The list is subject to a discount of from 60 and 10 and 5 to 70 per cent. in any quantity. This revised list has not been adopted by importers outside of New York:

Sizes.	Single. Per 50 feet.				Double. Per 50 feet.		
	1st	2d	3d	4th	1st	2d	3d
6 x 8 to 10 x 15.....	\$6.50	\$6.00	\$5.75	\$5.50	\$9.00	\$8.00	\$7.75
11 x 14 to 16 x 24.....	7.50	6.75	6.50	6.00	10.25	9.25	9.00
18 x 22 to 20 x 30.....	10.50	9.50	9.00	8.25	14.00	12.75	12.00
15 x 36 to 24 x 30.....	11.50	10.00	9.25	....	15.25	13.75	12.25
26 x 28 to 24 x 36.....	12.00	10.50	9.50	....	16.00	14.50	13.25
26 x 34 to 26 x 44.....	12.75	11.75	10.25	....	17.25	15.50	14.00
26 x 46 to 30 x 50.....	15.00	13.50	12.00	....	19.75	18.00	16.00
30 x 52 to 30 x 54.....	15.50	13.75	12.25	....	20.50	18.50	16.50
30 x 56 to 34 x 56.....	16.50	14.75	13.50	....	21.50	19.75	18.00
34 x 58 to 34 x 60.....	17.25	15.75	14.50	....	22.75	21.25	20.00
36 x 60 to 40 x 60.....	19.00	16.75	15.75	....	25.50	23.00	22.00

Sizes above—\$10 per box extra for every 5 inches.

An additional 10 per cent. will be charged for all Glass more than 40 inches wide. All sizes over 52 inches in length, and not making more than 81 united inches, will be charged in the 84 united inches bracket.

New York Hardware Club.

A RECENT ISSUE of the *Hardwareman* of London contains an interesting communication from Alfred L. Millard, an English Hardwareman, relating to his impressions from a recent trip to this country. In it he refers to the Hardware Club as follows:

Having secured our quarters, we made straight for Reade and Chambers streets, these being the streets in which are located the offices and showrooms of the leading Hardware manufacturers of the city. Within two hours of our arrival we were installed at the Hardware Club in Broadway, enjoying the hospitality of the Hardwaremen of this great cosmopolis. How hearty their greeting is! how pleased they seem to see us! We feel instinctively that we are among friends, and immediately feel at home. A word about this Hardware Club. Like all other things among our Yankee friends, this is properly done. The club is located right in the heart of the Hardware fraternity, and in one of the finest buildings on Broadway. It is something like 13 stories up, rather an advantage than otherwise. Express elevators running all day long land you in a few seconds at the top; and there you are away from the bustle, noise and dust of the street, with a magnificent view of the Hudson River and the city of New York. The club itself is fitted up regardless of expense, and in its furniture and upholstery will rank with any of our political West End clubs. There is a restaurant with seating accommoda-

tion for 100 guests, and between the hours of 12 and 2 o'clock a lively scene it is as the "men of metal" meet to dine and chat. There are also smoking, reception and committee rooms, and the usual offices; also a reading room furnished with all the trade literature, and a writing room—in fact, here is every convenience and luxury. And, now, Mr. Editor, why, in the world, have we no Hardware Club in the old country? There is room for one in London and in Birmingham, surely; and, if the trade would only co-operate as they have done in America, we might have a club that would rival theirs.

Further accessions to the membership of the Hardware Club of New York are to be reported, the following gentlemen having been elected members at a meeting of the governors on September 28:

CHARLES L. R. CLARK,
Landers, Frary & Clark,
New York.

JAMES CLARKE,
45 Vesey street, New York.
GEORGE A. GARDNER,
64 Reade street, New York.
JOHN J. WALTON,
164 Chambers street, New York

Sportsmen's Exposition.

THE SPORTSMEN'S EXPOSITION Association has entered into a contract with the manager of the Madison Square Garden, and the proper committee has decided on a garden plan, said to be entirely original, differing from those followed by the Bicycle, Food and other expositions.

It resembles somewhat, we are advised, the block system which was adopted at the Columbian Exposition.

A special committee, consisting of J. A. H. Dressel of the Union Metallic Cartridge Company and Justus Von Lengerke of Von Lengerke & Detmold, will take this plan and decide on a scale of rents shortly, and the management will then be ready to assign space. A prospectus giving detailed information is now in press and will probably be issued in a day or two.

T. H. GOSSETT, the Southern representative of John H. Graham & Co., has recently completed a three months' business trip for that house in the South, and is now in New York. He refers to a better feeling in business circles in the Southern States through which he has been traveling.

Van Wagoner & Williams Hardware Company's Catalogue.

VAN WAGONER & WILLIAMS
HARDWARE COMPANY,
Cleveland, Ohio, and 14 Warren
street, New York, issue under date of
October, 1894, a handsomely printed
and well arranged catalogue of the
goods manufactured by them. These
include Spring Hinges, Door Springs,
Wire Coat and Hat Hooks, Door Rap-
pers, Blind Adjusters, Dome Sad Iron
Heaters, Stove Pipe Dampers, Spring
Bolts, Hand Rail Screws, Cupboard
Catches, Iron Hooks and Eyes, Sliding
Door Hangers; also Solid Box and
Cast Vises, Hammers and Sledges, in
the manufacture and sale of which
they have succeeded to the business of
the Trenton Vise & Tool Works of
Trenton, N. J. In connection with
the catalogue it is remarked that the
list prices of the American, Gem and
Oxford Spring Hinges have been ad-
vanced so that the list, as published,
will be practically a consumers' list—
a change which the trade will appre-
ciate. In the Oxford Spring Hinges
attention is called to the additional
feature of Blanks, or Hinges without
springs, for the bottom part of the
door, also to the fact that the Hinges
with springs are increased in size, so
as to make a half pair of Springs and a
half pair of Blanks serviceable for
the lighter doors. The Knoxall and
Columbia Screen Door Hinges are
also represented and are meeting
with an increased demand each
season. The company call prominent
attention to their new sliding door
hanger, the American Trackless, an
illustrated description of which is
given in one of the following pages.
Two of the old style Door Rappers or
Knockers are among the illustrations
in the catalogue, the Colonial being a
copy of one much in use all through
New England, and the Marshfield a
duplicate of one used at the home of
Daniel Webster at Marshfield, Mass.
Illustrations of the Gem steel wire Coat
and Hat Hooks show the improved
pattern recently adopted; the wires of
the lower Hook being parallel, instead
of one wire being above the other, as
formerly made. A similar remark
applies to the Ceiling Hooks. The Dome
Sad Iron Heaters, the Excelsior and
Gem Stove Pipe Dampers were former-
ly made by the Shepard Hardware
Company. In the back part of the
book is a condensed price-list of
Spring Hinges, giving the prices, page
of catalogue and the number of some-
thing like 400 different numbers and
sizes of Spring Hinges.

An important line of goods repre-
sented in the catalogue are Solid Box
and Cast Vises, Hammers and Sledges,
in the manufacture and sale of which
the company have succeeded to the
business of the Trenton Vise & Tool
Works of Trenton, N. J. This includes
a full line of Solid Box Blacksmiths',
Swivel and Horseshoers' Vises, Plain
Parallel Vises, New Model Swivel,
Coachmakers', plain and Swivel and
Oval Slide or Farmers' Vises, Black-
smiths' Sledges, Stone and Coal Sledges,
Striking or Drilling, Napping, Black-
smiths' Hand, Hand Drilling, Masons'
and Stone Hammers, Stone Axes,
Railroad or Spike Mauls, Ship or
Top Mauls, Railroad Track Chis-
els, Mill and Stone Picks, &c.
The company direct special attention
to the superior finish of their Solid Box
Vises and to the quality of the forg-
ings, and state that they give partic-
ular attention to the parts which re-
ceive the strain. For the manufacture
of these goods the company have an

exceptionally complete plant equipped
with new and improved machinery.
The last page of the catalogue indi-
cates the history of the business, which
was founded by the American Spiral
Spring Hinge Company in 1862, who
were succeeded by Van Wagoner &
Williams in 1871. In 1883 the name
was changed to the Van Wagoner &
Williams Company, who were suc-
ceeded by Van Wagoner & Williams
Hardware Company in 1894.

The Iowa Farming Tool Company's Catalogue.

THE IOWA FARMING TOOL
COMPANY, Fort Madison, Iowa,
have issued an 1894-5 illustrated
catalogue of farm and garden tools,
including Scythe Snaths, Grain
Cradles, Forks, Hoes, Rakes, Weed-
ers, Potato and Manure Hooks, Hand-
les, Pokes, Ox Yokes, Barrows,
Transplanting Tools, &c. The com-
pany remark that the works were
started 40 years ago, and that the
wheels have run continuously during
that period, there being not one idle
day annually. In 1874, or 20 years
ago, the present company were incorpo-
rated. The company refer to these
facts in their advertisement in this
issue; also to the lines of goods
manufactured by them, covering
Forks, from 2 to 16 vines: Hoes with
blades from 4 to 12 inches wide;
Garden Rakes, of 6 to 16 teeth; Weed
Hoes of all patterns. Potato, Manure
and Clam Hooks; also Scythe Snaths
and Grain Cradles.

Requests for Price-Lists, Circulars, &c.

WOODBURY MILL & LUMBER
COMPANY, who are engaged
in the mill work and builders'
material business, making most of the
output in their own factory, which is
located on North Broad street, Wood-
bury, N. J., have put in a stock of Hard-
ware, Paints, Oils, Varnishes, Glass,
&c. The company will be pleased to re-
ceive catalogues, price-lists and cir-
culars from all branches of the trade.

The Hardware firm of Shively &
Davis of Diamond, Ohio, were dissolved
on the 21st ult. A. L. Davis assumes
the liabilities of the firm and will con-
tinue the business at the old stand.
Mr. Davis advises us that he will be
pleased to receive catalogues and price-
lists issued by the trade.

Simpson, Hall, Miller & Co.

SIMPSON, HALL, MILLER & CO.,
Wallingford, Conn., have just is-
sued a fine catalogue, designated
as No. 27, of their line of Silver Plated
Flat Ware. It is bound in stiff boards,
covered with wine colored cloth, and
there are 138 pages, each 9 x 12 inches,
fully illustrated and printed in a rich
shade of brown. An exceptionally
complete line in their new Yale pattern
is shown. By actual count there are
112 illustrations of the Yale goods,
covering large assortments of Spoons,
Knives, Forks, Tongs, Shells, Ladles,
Picks, Scoops, Jelly, Fish, Meat,
Cream, Pastry, Vegetable and Fruit
Servers, the existence of many of which
the average person does not suspect.
So many artistic articles in this de-
partment have been added of late years
by silversmiths that persons are often
puzzled to name them, but each has

its appropriate sphere and contributes
to the elegance of the table. Other
patterns are the Harvard, Magnolia,
Athens, Cardinal, Sultana, &c. The
catalogue is an elegant and compre-
hensive one and will be appreciated by
the trade.

Carriage Wood Work.

PADDOCK & KLEINE, 107 Cham-
bers street, New York, have is-
sued a net cash price-list of
Wagon and Carriage Wood Work,
Iron, Steel, Axles, Springs and Hard-
ware. This pamphlet of 20 pages, in
either English or Spanish, is designed
for export trade only. A feature of
the work is an attempt at simplifying
and rendering intelligible the grading
of timber, so that buyers in ordering
may know what they are entitled to
receive, which is not always plain in
many lists where arbitrary signs such
as stars and nuts are used and given
a different significance by various
manufacturers. Hickory Spokes,
Rims, Poles and Shafts are graded
thus:

Quality.

- 1st. Choice all white second growth.
- 2d. Choice white and red second growth.
- 3d. Choice forest growth.
- 4th. Select forest growth.
- 5th. Ordinary stock.

White Oak Rims and Hubs, Oak
Spokes and Elm Hubs are similarly
classified, taking into consideration the
changed conditions. The issuing of
catalogues, circulars, &c., in Spanish,
intended for Latin-America trade, is
to be commended, as trade literature
in the buyer's own language is more
likely to be read than if entirely for-
eign to him, necessitating the employ-
ing of an interpreter.

Pure Aluminum Ware.

SIDNEY SHEPARD & CO., Buffalo,
N. Y., and C. Sidney Shepard &
Co., 23 and 25 Randolph street,
Chicago, are now offering to the
trade a line of domestic utensils of
their own manufacture made of pure
aluminum. The line made thus far
comprises Dish Pans, Milk Pans, Sauce
Pans, Preserving Kettles, Pudding
Pans, Cake Pans, Muffin Pans, Corn
Cake Pans, Wash Bowls, Square Bread
Pans, Fry Pans, Dripping Pans, Drink-
ing Cups, Water Dippers, Pie Plates
and Perfection Cake Pans. These are
made with satin finish and present a
most handsome appearance. The firm
have issued a catalogue entitled "Pure
Aluminum Ware," which is worthy of
the fine line of goods of which it treats.
It is printed in blue ink on fine paper,
with illustrations in aluminum bronze,
is bound in heavy paper the color of
which suggests aluminum, and is
mailed in envelopes of the same paper.

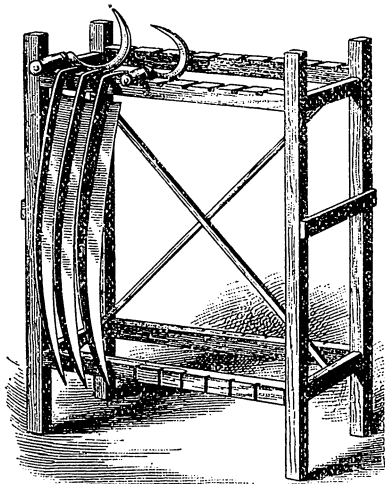
Barney & Berry.

BARNEY & BERRY, Springfield,
Mass., manufacturers of an ex-
tensive assortment of Ice Skates,
have brought out Skate A with some
improvements for the season trade.
The blades are of cast steel, polished,
and much heavier every way than
heretofore incorporated in Skates of
this grade, having, it is said, the same
thickness and rock as their higher
grades. The blade at the forward end
is riveted fast to the plate by means of
two toe brackets as in their expensive
patterns. It is a lever, all clamp Skate,
with knurl adjustment. It can be
supplied in nine sizes, 8 to 12 inches
inclusive. Grade O, bright, is listed
at 60 cents per pair, and Grade 2, same

Skate nickeled, at \$1 per pair, subject to trade discounts. The New England office is at 115 Broad street, Boston, Mass. Pope & Stevens, 114 Chambers street, New York, agents for these goods, will on October 8 open a branch office in Philadelphia at 23 North Fourth street, in charge of Walter B. Stevens, Jr., as manager, for the skating season, or until about February 1, 1895. A line of Roller Skates and Dog Collars will be carried at this branch, together with a stock of C. S. Osborn & Co.'s saddlery tools.

Scythe Rack.

THE ACCOMPANYING CUT represents a rack for holding the stock of Scythes, a description of which appeared in *Ironmongery* of London. The upright posts are 2 inches square, and the side rails upon which the Scythes hang are $1 \times 1\frac{1}{4}$



Scythe Rack.

inches in size. The rack is 42 inches long and 48 inches high. The slots cut in the top rails are just wide enough to accommodate the heels of the Scythes, while the cuts in the lower rails are made with a hand saw, sufficiently deep to allow the ends of the Scythes to rest in their proper places. The rack described is designed to hold 18 Scythes on each side—though a rack can obviously be made to hold a greater or less quantity.

Delivery of Goods.

CHESTER G. AMBLER.

THE SATISFACTION of customers depends so largely upon the prompt and proper delivery of goods purchased by them as to make it important that this department should be in charge of one who is prompt and methodical in his habits. He should also be well acquainted with the location of the streets of his city.

Promptness.

As soon as an order is filled, which should be with as little delay as possible, the packages should be marked and given in charge of the delivery clerk, for although the goods are not to be delivered for several hours, some annoyance and inconvenience may be saved the delivery department if notified at once instead of only a short while

before the time they were promised, and perhaps a few minutes too late for a load that has just gone in the same direction they are to be sent.

Delivery Tag.

For marking goods to be delivered, a tag printed as shown in Fig. 1 is convenient:

—FROM—
SMITH & BROWN,
Hardware, Paints, Etc.
247 & 249 Main St., Early, N. Y.

For _____	
No. _____	St. _____
Sold by _____	
Paid _____	Collect _____
Charged _____	C. O. D. _____

MEMORANDA OF GOODS.

Deliver _____

Fig. 1.—Delivery Tag.

It will be noticed that blank spaces are left for the purchaser's name and address, the salesman's name, the amount to be collected, if any, the enumeration of articles or packages, and time for delivery. In case the goods are paid for or exchanged, it should be indicated by a check mark opposite one of those words.

Convenience of Customers.

In the largest cities, of course, it is necessary to have stated hours for delivery; but where it is practicable I

When a large number of goods are sent a bill may accompany the receipt. The following system has been tried with satisfactory results, and I think will be found to have some advantages in towns and cities of moderate size:

As soon as possible after the goods are received by the delivery clerk, he makes an entry in a book kept for the purpose of entering the writing on the tag, and an additional space is given for the name of the person who delivers the goods. After being entered, such packages as are not too bulky are placed in bins, which are devoted to different sections of the city. When wishing to make a delivery a driver is called and given such goods as in the judgment of the delivery clerk should go out first, together with whatever can be taken on the same trip. The next team available takes another route, and so on throughout the day. Each teamster is required to keep an account of his own deliveries in a book which he carries with him. The teamsters' books, as well as the general delivery books, when filled are put away for future reference.

Not only is the record of deliveries valuable for reference in case of a complaint, but it has been of service to the bookkeeper in a number of instances in showing neglect on the part of salesmen to charge goods.

Trade Items.

RUSSELL & ERWIN MFG. COMPANY, 43-47 Chambers street, New York City, are putting in the front part of their sample floor some excellent cabinet work in the way of sample cases, having flat plate glass tops, with interior drawers and cupboards. These cases are arranged in the form of a rectangle with openings on both sides, so buyers can enter and examine samples of Builders' Hardware, &c., mounted on sliding drawers, which keep the goods free from dust. The material is of light hardwood in natural finish and trimmed with bronze Hardware.

BRONSON & NEAR, 35 Warren street, New York, selling agents for the

DATE _____ 189

Received in good order from **SMITH & BROWN**

For

Mrs. Mary Jones.

Signed _____

Delivered by _____

Fig. 2.—Form of Receipt.

think it is best to arrange as far as possible for the convenience of customers. The time agreed upon is written on the bottom of the tag, after the word deliver. When it is necessary to take receipts for goods delivered, a form similar to that shown in Fig. 2 may be used.

Novelty Stamping Company, Bellaire, Ohio, direct the attention of the trade to their line of Improved Iron Enameled (mottled) Ware, which at present comprises a line of leading articles. The factory now being enlarged it is expected will be finished by January 1 next, when we are told they will be in a position to supply complete lines of goods. Their Coffee and Tea Pots

are made with wood handles. They are making a Spider of sheet steel, polished pan, from one piece of metal. Emphasis is laid on the high glaze of their Enameled Ware.

F. R. EMMONS & BRO., representatives of a number of manufacturers of various kinds of Tools, who for years were at 21 Warren street, New York, are now located at No. 32 in the same street. Having discontinued the carrying of stock for pick up orders, they now solicit orders for direct factory shipment, and advise us that owing to the saving in operating expenses they are in a position to make lower quotations than formerly.

H. L. JUDD & Co., 87 Chambers street, New York, are making a very effective display of art goods in their large show windows, including Lamps and Shades, Onyx Tables, Pedestals, Gilt and other Picture Frames for imperial photographs, Hand Mirrors, and a large number of similar goods suitable for fall and holiday trade. The goods are advantageously placed on a frame work of steps, covered with black velvet.

ATLAS MFG. COMPANY, New Haven, Conn., advise us that they are now making the improved form Bradley Steel Shelf Bracket of considerably heavier wire than formerly, and that they are making perfect goods. They state that the sale on these goods has largely increased during the past year, notwithstanding the unfavorable condition of trade. The company have also resumed the manufacture of the Atlas Coat and Hat Hook, which some time ago was dropped; but a subsequent lively demand has induced them to commence its manufacture again.

H. W. LEE, formerly of Lee, Holland & Co., Buffalo, N. Y., is now with the Arcade File Works in their New York office, 83 Reade street.

F. V. WOOSTER, 66 Beverly street, Boston, in his advertisement in this issue calls attention to Dolber's Sash Fastener. The Fastener is designed for outside windows, which are held in place by a pin, which is a part of the lever, entering a brass tube inserted in the outside casing. By turning the lever up or down the pin is locked in the bracket on the sash, making, it is claimed, a secure and tight joint.

Price-Lists, Circulars, &c.

F. E. KOHLER & CO., Canton, Ohio: Lawn Queen Rakes, Flexible Back Curry Combs and Mystic Lawn Fountain. An illustrated circular shows these goods, the Rakes being made in two styles—steel and wood head. The teeth are made of No. 9 wire, and curved to prevent digging the ground. The Rakes are reversible and can be used for grass and leaves. A malleable iron socket is attached to the head, in which the handle is fastened.

AMERICAN SAW COMPANY, Trenton, N. J.: Saws, Saw Makers' Tools, Emery Grinding and Buffing Machines and Wrenches. An 1894 catalogue gives illustrations, descriptions and prices of Inserted Tooth Saws, Solid Circular Saws, Band, Cross Cut and Ice Saws, Swages, Mandrels, Gummets, Saw Makers' Anvils, Alligator Wrench, Curtis Pipe Wrench, Grinding and Buffing Machinery, &c. The manufacturers, referring to the Curtis Pipe Wrench, state that it never locks itself, having a swinging under jaw which releases it very quickly, and

that it also takes a large number of sizes at one adjustment.

KEYSTONE FARM MACHINE WORKS, York, Pa.: Abridged catalogue and price-list "B," covering Invincible, Old Hickory, Lightning, Reliable, Perfection, Economy, Imperial, Cumberland Valley, Codorus, Globe, Noxall, Susquehanna, Clipper, Dizie, Keystone-Burrall and Keystone Clinton Corn Shellers; Alligator, Little York, Rapid and F. F. V. Hay, Straw and Feed Cutters; Keystone Horse Powers, Field Rollers and Garden Wheelbarrows; Park and Lawn Swings; Park Settees; Combined Chair and Step Ladders, and Keystone Upright Baling Presses. The catalogue is in convenient form for pocket use and contains a handy telegraph cipher code and rules upon which the concern conduct their business.

THE RAYMOND & CAMPBELL MFG. COMPANY, Middletown, Pa., and 244 Water street, New York: Ranges, Cook Stoves, Heaters, Furnaces, Steam and Hot Water Heaters. The catalogue is handsome in design and execution, while each line of goods is shown in a variety of designs and sizes.

MASON & PARKER, Winchendon, Mass.: Bit Braces, Garden and Floral Tools, Hardware Specialties and Steel Toys. Catalogues are devoted to these goods, giving illustrations, prices and descriptions of the concern's products.

BOSTON BELTING COMPANY, Boston, Mass.: Belting, Hose, Packing, Printers' Blankets, Valves, Gaskets, Covered Rollers, Deckle Straps and all kinds of Mechanical Rubber Goods. An illustrated catalogue and price-list issued by the company relates to these goods.

THE WILLIAM SCHOLLEHORN COMPANY, New Haven, Conn., Julius Berbecker & Co., New York, agents: Shears, Scissors and Pliers. An illustrated catalogue and price-list shows a line of Star Scissors and Shears; also Elm City Shears, Bernard Parallel Jaws Pliers in flat nose, round nose, cutting, in sizes for general and jewelers' use; Bernard Gas, Chandelier, Linemen Cutting, Electric Cutting, Sewing Machine Pliers with belt punch; Bernard Folding dividers and Excelsior Pencil Holder.

THE BUTLER MFG. COMPANY, 46-48 South Clinton street, Chicago: Electrical Specialties and the Westphal Screw, Bolt and Shot Cases. The company state that they have purchased the entire interests pertaining to the Westphal revolving case business, and that they are now the sole manufacturers of these goods.

A. J. WEED & Co., 106-108 Liberty street, New York: Venetian Iron Lamps, Lanterns, Candle Sticks, Screens, Grilles, &c. The company also furnish materials, tools, working drawing design sheets and instructions, thus enabling amateurs to make Venetian iron work at their homes.

THE MORFORD REGISTER COMPANY, Allentown, Pa.: The Morford Automatic Cash Register and Morford's Safety Alarm Cash Tills. By the use of the Register the manufacturers state that no counter book is needed, that every sale may be registered, that goods sent out on credit may be properly charged, that money paid out may be entered, resulting in the cash balancing and every penny being accounted for. The Alarm Till is so arranged that an alarm is rung each time the drawer is tampered with or opened. A catalogue illustrates and describes these articles.

Hardware Auction Sale.

E. BISSELL, SON & CO., 12 Murray street and 15 Park place, New York, announce an important trade sale on Thursday and Friday, October 11 and 12. It will be observed from the Special Notice on another page that the sale will include Table and Pocket Cutlery, Carvers, Plated Flat Ware, Scissors, Shears, &c. The invoices of Cutlery are referred to as large and attractive and direct from manufacturers. On the first day of the sale about 2000 dozen Union File Company's first quality Files will also be offered. All of the goods will be sold without reserve.

It Is Reported—

Arkansas.

That one of the most disastrous fires in the history of FAYETTEVILLE occurred on the 25th ult., the total loss aggregating \$150,000. E. B. Harrison's Hardware store was among the business houses destroyed.

That I. D. Gee, PRESCOTT, has opened a new Hardware and Stove store.

That A. O. Young, Hardware, Stoves, &c., NEBRO, has been succeeded by Young & Webb.

Illinois.

That the Hardware store of Michael Fisher, INDIANOLA, was broken into on the 25th ult., and a large number of Knives and Revolvers taken.

That the Hardware store of J. S. Afferbaugh, DAVIS, was entered by thieves on the 20th ult., and about \$50 worth of Pocket Knives and Razors stolen. This makes the fourth time that the premises have been robbed.

That Jones & Capps, PLAINFIELD, are successors of J. R. Jones, tinner. They will put in a largestock of Hardware and Stoves.

That Arnold Bros., CHENOA, will soon open a new Hardware store in the recently erected Gordon block.

That George Hall has purchased C. M. Barnum's share in the Hardware store of Barnum & Murdock, KIRKWOOD.

Indiana.

That the Seavey Hardware Company, FORT WAYNE, have been reorganized, and G. W. Stilson and James Leonard have become members of the firm.

That the Ort-Berkey Hardware Company and the Whitaker Carriage & Mfg. Company, GOSHEN, have been consolidated under the style of the Goshen Hardware Company, with a capital of \$10,000. They will deal in Heavy Hardware, Wagon and Carriage Material and Blacksmiths' Supplies, and will manufacture, besides, a complete line of buggy tops, cushions and buggy material. The officers are James A. Arthur, president; L. J. Miller, vice-president; George Ort, secretary, and C. L. Landgreaver, treasurer.

Iowa.

That Fernald & Co.'s Hardware store, MOUNT PLEASANT, was burglarized on the 14th ult.; \$60 worth of goods were taken.

That burglars entered the Hardware store of Brady Bros. SANBORN, on the 18th ult. and carried off about \$200 worth of Cutlery and other goods.

That Cole & Cole, Hardware merchants, of COUNCIL BLUFFS, a few weeks ago commenced the manufacture of a new air tight heating stove of which they are the inventors. At the start a dozen or two stoves a day was the full extent of their capacity, but now they have devised the machinery necessary and are turning out over 1000 a month,

giving employment to a force of 25 men. They expect shortly to double their capacity.

That E. F. Schlecht & Co. of OELWEIN have sold out.

That Owen & Ritter, Hardware merchants, HEDRICK, have dissolved partnership.

Kentucky.

That J. B. Chambers, Implements, &c., FULTON, has gone out of business.

Michigan.

That L. V. Beebe's Hardware store, at ELMIRA, was burned out a few days since.

That William A. Towner, president of the Towner Hardware Company, MUSKEGON, was married on the 19th ult. to Miss Helen M. Berdan, a niece of General Berdan.

That E. B. Gaylord, SHELBY, has sold out his Hardware business.

That Richardson & Teman, GOBLEVILLE, have sold out.

That Middlebrook & Rose, MANISTIQUE, have been succeeded by Mason H. Quick & Co.

That W. W. Hodge, Hardware and Agricultural Implements, EUREKA, has been succeeded by Edgar Belcher.

Minnesota.

That the Hardware store of J. F. Humiston of HERON LAKE was recently burglarized and a large quantity of Cutlery and Revolvers carried away.

That Hardware merchant C. A. Roy of LEROY suffered a loss of \$3000 from fire on the 23d ult.

That thieves entered the Hardware store of A. Hammerstein, COKATO, on the 17th ult., and stole about \$50 worth of Cutlery and Cartridges.

That C. P. Kiel, Peter Kiel and Tollef Helle will soon open a new Hardware store at ALBERT LEA. C. P. Kiel has had many years' experience in the business.

That Minzel & Schuett, Hardware and Implements, BELINGHAM, have dissolved.

That A. M. Clark & Son have succeeded A. M. Clark in the Hardware business at LAMBERTON.

Missouri.

That L. L. Coleman has sold an interest in his Hardware store, at LIBERAL, to Mr. Morgan.

That Mason & Shaw, OLNEY, have disposed of their stock of Hardware to Owings & Henry.

That D. Fort, Hardware merchant, of MIRABILE, has been succeeded by D. Fort & Son.

Nebraska.

That Trexler Bros.' Hardware store, at BENNETT, was entered by thieves on the 18th ult. They secured about \$25 worth of goods.

That Buol Bros., WAUSA, have disposed of their business.

That Bailey & Greeson, ELMWOOD, have sold out.

New Jersey.

That Woodbury Mill & Lumber Company, WOODBURY, who are in the mill work and builders' material business, making most of the output in their own factory, have put in a stock of Hardware, Paints, Oils, &c.

New York.

That the F. W. Oliver Company of NIAGARA FALLS have been incorporated, with a capital of \$60,000. The directors are Frank W. Oliver, John C. Lammerts, Alexander J. Porter, Fred. J. Pierce and Charles J. Elderfeld, all of NIAGARA FALLS.

That Henry Woodruff's Hardware store, at WINDSOR, was burned out on the 26th ult.

That Bowman Brothers have purchased the Hardware business of Earl Bros., OGDENSBURG. The new firm consists of Robert and James Bowman. The former has been in the employ of W. D. Britton for the past

seven years and the latter in the employ of Charles Ashley for the past five years, so that both are well acquainted with the Hardware business.

That Willard H. Lamson and W. H. Prescott of TICONDEROGA have formed a partnership to engage in the Hardware business.

That Newton Davis of EDDYVILLE has recently commenced the Hardware business.

That David D. Gregory, in the wholesale and retail Hardware business, at SYRACUSE, has sold out.

North Dakota.

That Shea and Isidore Katz of BRAINERD, MINN., have opened a new Hardware store at FARGO.

Ohio.

That J. H. McKinney of CAMBRIDGE is managing the Hardware store of his brother, W. W. McKinney, NEW CONCORD, who died recently. The business will soon be sold.

That the Bryan Hardware Company, BRYAN, have been incorporated. The capital stock is \$9400.

That Davis Bros. have succeeded James F. Morgan in the Hardware and Implement business at THURMAN.

That the Hardware firm of Shively & Davis, DIAMOND, have been dissolved. Mr. Shively retiring. A. L. Davis will continue the business at the old stand.

That Smith & Butts, TOLEDO, have sold out to T. J. Smith.

Oklahoma.

That C. R. Klingman & Co. are a new firm at DOWNS, having recently purchased the Hardware stock of F. S. Whitmer.

That S. B. Pettie, Hardware merchant, of NORTH ENID, has removed to EL RENO.

Pennsylvania.

That the powder house of the John Porter Hardware Company, MEADVILLE, was robbed on the 23d ult. About 150 pounds of Gunpowder and four cases of Dynamite were stolen. It is remarkable that the thieves got away with their booty in safety.

South Dakota.

That D. H. Wood of KELLOGG township has purchased a stock of Hardware in ALPENA, to which point he will remove.

That W. M. Holmes, who recently purchased the Dillon stock of Hardware at SIOUX FALLS, has shipped it to AUSTIN, MINN.

Tennessee.

That E. M. Anderson, who has been connected with F. H. Woodworth & Co., Hardware merchants, of CHATTANOOGA, has decided to engage in business at SHERMAN, TEXAS, on his own account.

That Cooper, Brittle & Ambrister, MARYVILLE, have been succeeded by McNutt Bros. & Moore.

Texas.

That E. M. Anderson, who has been connected with F. H. Woodworth & Co. of CHATTANOOGA, TENN, will soon engage in the Hardware business at SHERMAN.

That the J. R. Morris Sons Company's Hardware stock, at HOUSTON, has been sold by George A. Race, trustee, to Mrs. H. C. Morris for \$26,000. A new company is to be incorporated under the name of the J. R. Morris Hardware Company.

Washington.

That \$50 worth of Hardware and Cutlery were recently stolen from the Union Hardware Company's store, at SEATTLE.

That Adam Knox has recently entered the Hardware business at DAVENPORT.

Wisconsin.

That the Hardware store of F. A. Baker & Company, EVANSVILLE, was visited by thieves on September 23.

Over \$200 worth of Knives, Razors and Revolvers were carried off.

That J. D. Trumbull has bought out J. H. Pace & Co.'s stock of Hardware, at MAIDEN ROCK.

That Sheerin & Williams, MARSHFIELD, are enlarging their Hardware store by building a new tin shop, converting the room formerly occupied for that purpose into an addition to the main store.

That burglars a short time since broke into Crosley & Markson's Hardware store, at MILTON, and secured about \$100 worth of Cutlery.

That Fredrickson & Reitzel, Hardware &c., WHITEHALL, have sold out.

The Hardware trade throughout the country are requested to report business changes, improvements and other matters of trade interest suitable for mention in this department.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

White Lead.—The officials of the leading corrodors affirm that they have made no change in list prices in this market. It is generally reported, however, that there is sharp competition in almost all other trade centers, and circumstantial evidence accumulates that the official price-list is frequently disregarded in this market. There have been no sensational movements here, nor any suggestions of more than ordinary competition, but the market nevertheless has a weak appearance, and the indications are that the "trust" has considerable to contend against since the revision of the duty. Consumption has not been stimulated. Dry Lead in carload lots has been sold here at as low as 3¼¢, and reports from the West state that relatively lower prices were accepted there for delivery during the next three months. Lead in Oil is comparatively as low, or on the basis of 5¼¢ for large packages. English has been offered relatively as low for near future delivery, or on the basis of 5½¢ landed here. Altogether the conditions are quite suggestive of a weak market, since outside corrodors and manufacturers of mixed Leads are actively canvassing for business at low prices. Sales are, to all accounts, not above the average for the season.

Red Lead.—No improvement whatever in the market has taken place. Some importers ask a slight advance, in view of the fact that they have made more than average sales of late, but no business has been done except possibly in a small way at other than previous low prices. Domestic has undergone no decided change in price, and has met with only moderate sale, but the market looks decidedly soft. On particularly desirable orders the public quotations are shaded ¼¢ or more.

Litharge.—Low grades have met with very fair sale, and there is still quite a good inquiry that keeps prices up to the level of about 4¼¢ for large lots. The higher grades of domestic are being taken only in a perfunctory way, and list prices are shaded not infrequently to the extent of ¼¢ @ ½¢ per lb. Foreign brands are offered at somewhat low and irregular prices, but on terms that check business for the present.

Orange Mineral.—Although comparatively low prices are made the business in domestic product has been light and the market suffers more or less from active foreign competition. Foreign is offered for future delivery at about 6¢ laid down here for near

future delivery, but the offering is chiefly English product. This is likely to excite competition in Continental brands that have latterly been commanding comparatively stiff prices. It is likely also to affect the price for domestic. Taken as a whole the market looks unsettled, to say the best of it.

Zincs.—Large buyers are doing nothing at present aside from taking in stock that goes forward on old contracts. The smaller trade buy in the usual perfunctory way. Special prices are quoted in some instances, with a view of attracting orders, but these have been fruitless in view of the general belief that prices are more likely to ease off than to improve. No change has taken place in foreign brands.

Colors, &c.—In Dry Colors that are chiefly purchased by grinders there has been nothing more than routine business. That was chiefly at prices that have ruled for some time past. In other words there is really no new feature. Practically the same may be said of Colors in Oil, and it does not appear that anything more than routine trade has been done in Mixed Paints.

Miscellaneous.—No changes of importance have occurred in Whiting, Paris White, Putty, &c. Prices are down to the previous low basis, but purchases are made in extremely conservative manner, and old prices are the rule.

Oils and Turpentine.

Linseed Oil.—There is more than fragmentary evidence going to show that the recent advance in prices is due to natural conditions. Records show that the price of domestic seed has advanced considerably of late, but there is no anxiety on the part of buyers, and considerable foreign stock has been imported. To this extent the tension is relieved somewhat, but not enough to cheapen cost, and quotations remain on the basis of 54¢ for raw Oil of local make. Bids of 2¢ under that for round lots have been refused.

Cotton Seed Oils.—Producers are offering new Oil more freely, and in some instances at lower prices. Buyers take hold cautiously, however, leaving the market in a rather weak condition. Exporters manifest little interest except in the higher grades of refined Oil and do not purchase those with any freedom.

Lard Oil.—A decline in prices to the basis of 67¢ for prime city brands has taken place and the market is showing rather weak tone at the movement. Western brands have been indirectly offered at 65¢ for near future delivery. Dealings have been moderate and the demand at present is spiritless.

Fish Oils.—The association price for crude Menhaden Oil has been advanced 1¢ per gallon. This rise is attributed to comparatively moderate supplies and more liberal purchases for both export and home trade account. Jobbing movement of the pressed and bleached Oils is better and prices are somewhat firmer. Crude Sperm Oil is without change, but the manufactured products are meeting with better sale at somewhat reduced prices. Whale and Cod Oils remain without important change.

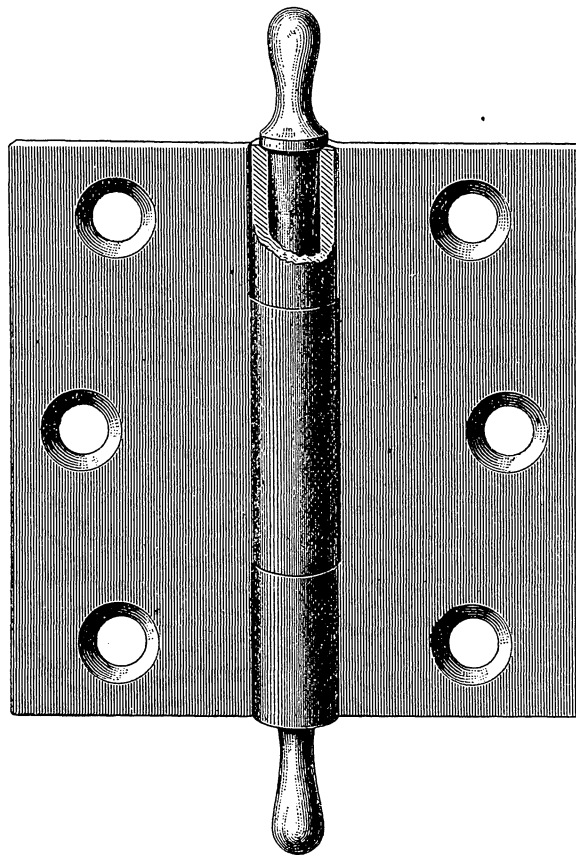
Miscellaneous.—Cocoanut Oil has averaged slightly lower in price, and the market has a weakish appearance, with only moderate business passing. Neatsfoot, Red and Tallow Oils are unchanged in price and sell rather slowly.

Spirits Turpentine.—Some business has been effected recently at comparatively low prices, but better advices from the South caused some improvement toward the close, and the market has a fairly firm appearance at this writing. About 28½¢ for regular and 29¢ for machine barrels are close quotations on round lots.

The Perfection Vegetable Slicer.

The Leavitt Machine Company, Orange, Mass., are offering the trade a vegetable slicer, as here shown. It consists of a board, in which an oblong

that when driven down it will not work up, a fault, it is remarked, common in many butts. When necessary to take the pin out a slight blow on the lower end loosens it. The object of the manufacturers in placing these



Loose Pin Steel Reversible Butt.

opening is made diagonally near the cutter and concaved on one side. The knife is placed on the flat side over the opening in such a position as to make a shear cut both ways. The cutter is made of steel, with beveled edges, and is attached to the board by means of two screws. The device is designed

goods on the market is to give the trade a neat steeple tipped reversible butt at the same price as the regular reversible butt.

Goulds' Air Pressure Pumps.

The Goulds Mfg. Company, Seneca Falls, N. Y., have put on the market two air pressure pumps, for filling pneumatic tires, &c. The smaller pump, No. 1037, has all the working parts made of brass, nickel plated, except the plunger rod, which is steel. A malleable iron foot rest with four screw holes adapts the pump for either stationary or portable use. With each pump is furnished 2 feet of rubber discharge hose with a universal coupling, and when advised as to the make of tire the company provide a nipple to complete connection to the air valve. The Lightning pump No. 928 is larger and heavier than the one described. The working parts are brass with a strong bearer top guiding rod worked by a compound lever. The pump is regularly fitted for ¾-inch discharge hose, but can be changed as required. The pump is especially designed for bicycle and Hardware stores, hotels, &c. The pump can be used for filling pneumatic tires on road carts, and also used in connection with pressure tanks. The manufacturers remark that the system of generating air pressure in pressure tanks from which it is led to pneumatic tires, or for other uses, is comparatively new and almost untried, though it possesses many points of advantage over the ordinary application of pumping direct into a receptacle, as tire, &c.



The Perfection Vegetable Slicer.

for slicing potatoes, apples, cucumbers, and all kinds of fruit and vegetables.

Loose Pin Steel Reversible Butt.

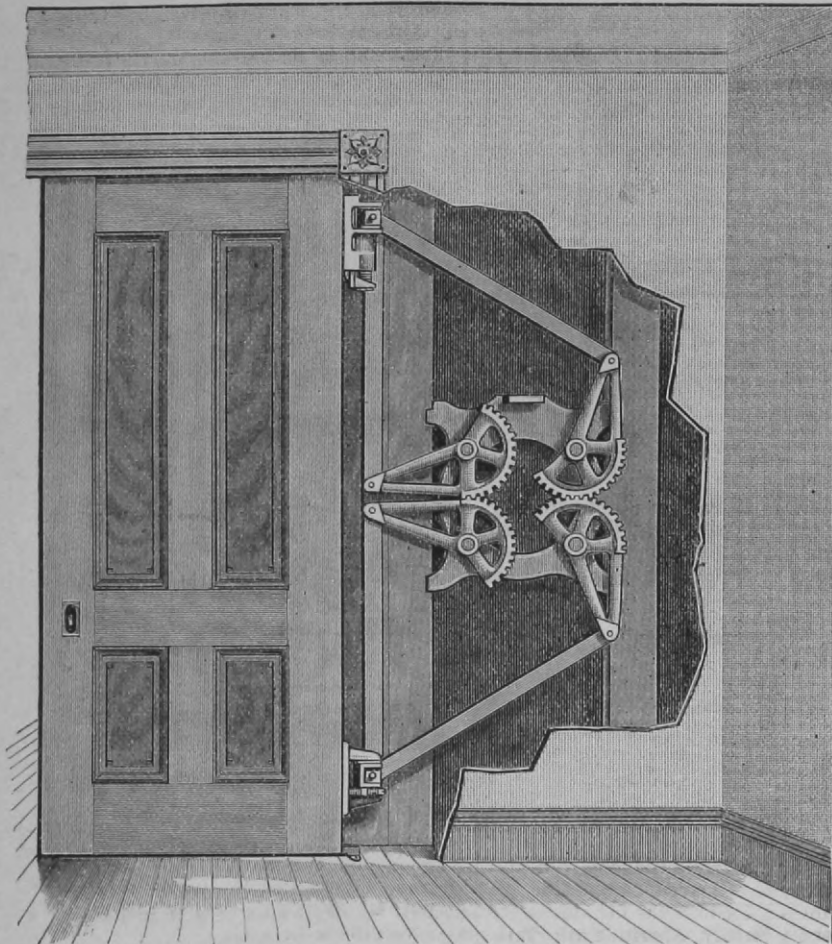
McKinney Mfg. Company, Allegheny, Pa., are introducing a polished steel improved reversible butt, with loose pin, as herewith illustrated. The special feature of this butt is that the pin is made slightly larger under the head, so

American Trackless Sliding Door Hangers.

The accompanying cut represents a trackless door hanger put upon the market by Van Wagoner & Williams Hardware Company, Cleveland, Ohio,

ets when they need adjusting. There being no track or wheels used less space is required above the doors, and the space between the studding is closed up tight. The manufacturers claim that as there is no track used above or below special framing is obviated; that there are no wheels to

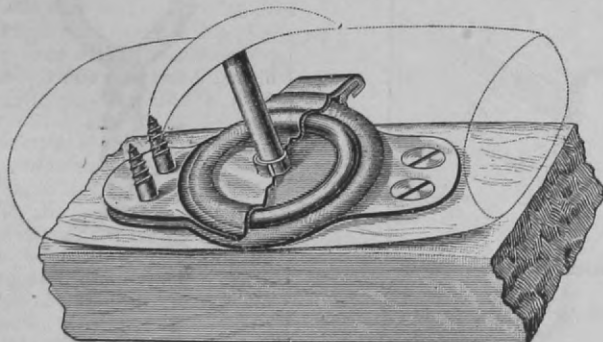
and over. The hangers being put together at the factory and being simple in construction, it is remarked, they can be put up in a short space of time, thus effecting a large saving in time and expense. The company put this hanger on the market confident that it possesses advantages which will commend it to the trade, and refer to the favor with which it has been received by architects and merchants.



American Trackless Sliding Door Hangers.

and 14 Warren street, New York. The hangers can be attached to either row of studding, and a space of $2\frac{1}{4}$ inches in addition to the thickness of the door allows ample space between the rows of studding for clearance. The manner in which they are attached to the door is

bind by reason of warping or of sagging track; that the movement of the hangers is perfectly parallel and prevents binding; that the hangers work noiselessly; that the operation is extremely easy, and that the different parts of the hangers are made to



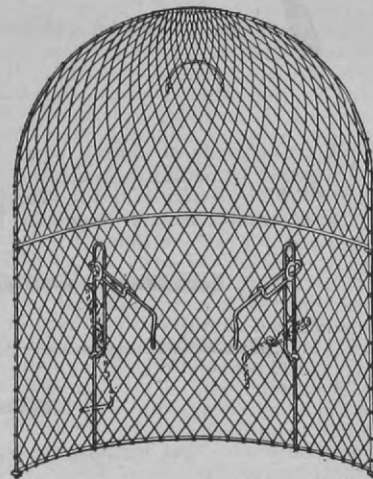
The Perfect Whiffletree Plate.

shown in the illustration. A set screw is provided at the upper plate on the door by which the door may be raised or lowered, and another set screw is placed in the lower plate by which the door may be adjusted plumb. For double doors a gravity stop is provided, to be placed overhead between the doors, which may be pushed up with the finger out of the way, thus allowing the doors to be drawn out of the pock-

carry three times the weight of the door for which they are designed. The hangers are packed, fully assembled and ready to be put up, one set in a crate, including all necessary bolts and screws. Working drawings with full directions for putting up accompany each set. Half sets are furnished for single doors. It is stated that the No. 1 hanger will hang any door from 2 to 4 feet wide and 6 feet 6 inches high

Extension Fire Guard Arm.

The Cincinnati Mfg. Company, Cincinnati, Ohio, are offering extension arms in connection with fire guards, as shown herewith. The arms are made to raise or lower to fit the grate bars, also to be extended or thrown back to fit any grate. The point is made that this is a desirable addition to fire guards, as grate baskets vary much in size and style. When extension arms



Extension Fire Guard Arm.

are specified in ordering guards the company furnish them without additional cost.

The Perfect Whiffletree Plate.

The Bellamy Company, 243 Pearl street, New York, are offering an improved form of whiffletree plate, as shown herewith. The plate is made of wrought steel with a double safety lock. Between the upper and lower steel plates is a solid brass ring, giving four anti-friction bearing surfaces. The manufacturers explain that the only part that can wear is the anti-friction ring and that this may be replaced in five minutes at a cost of one cent. They state that the plate is strong, light and durable.

Joseph H. Witheford, a representative of the New Zealand Government, has arrived at San Francisco on his way to Washington, where he will endeavor to stimulate trade between the United States and Australasia. Mr. Witheford is anxious that American capital should put on a line of steamers between this country and the Australian colonies, as he says his countrymen are very desirous to import from the United States. The foreign trade of the Australian colonies last year reached \$500,000,000, almost the whole of which was secured by European countries.

Natural gas has been struck at Coatsburg, 17 miles from Quincy, Ill., by workmen engaged in boring for water. The find is regarded as very valuable.

Jacobs' Adjustable Steel Buck Saw Frame.

The accompanying illustrations relate to a steel buck saw frame, offered by the Jacobs Mfg. Company, 17 Chardon street, Boston, Mass. The frame is

made of a fine grade of spring steel, joined together by malleable iron couplings, as shown by letters A and B. The frame is adjustable to any length of

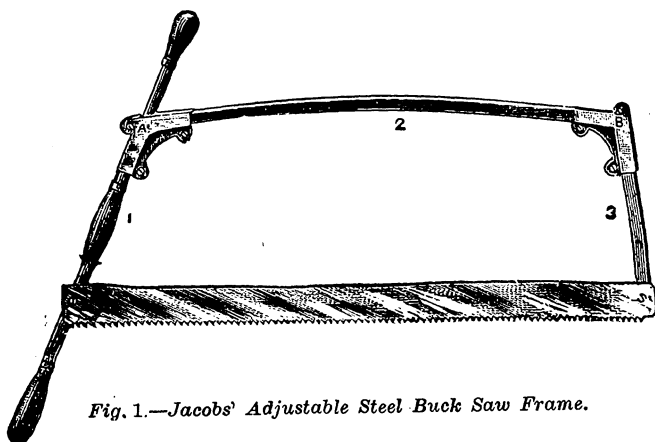


Fig. 1.—Jacobs' Adjustable Steel Buck Saw Frame.

made of a fine grade of spring steel, joined together by malleable iron couplings, as shown by letters A and B. The frame is adjustable to any length of

sizes and in all regular styles of finish. The concern advise us that they are making a line of 62 numbers of braces, of which 42 are ratchet pattern, and of

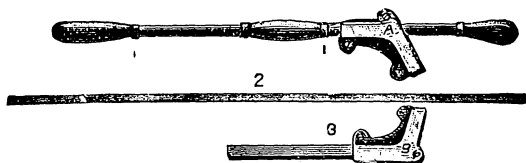


Fig. 2.—Parts of the Frame Detached.

saw, which, it is stated, is held at a rigid tension. The frame is also adjustable to different depths of cut and is detachable so that it may be packed in an ordinary tool chest. The point is made that as the frame is made of steel it is not affected by weather, thus making it practically indestructible.

Lever and Ring Ratchet Brace.

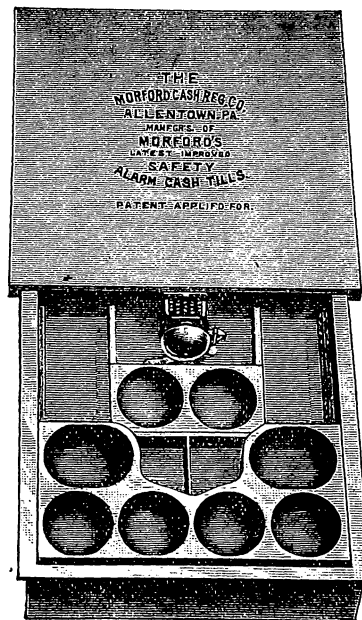
The ratchet brace shown in the accompanying cut is being put on the market by Mason & Parker, Winchen-

don, Mass. The ratchet is referred to by the makers as being of the well-known lever and ring pattern with some improvements and adaptations. The ratchet wheel and socket are made in one piece of cast steel, thus doing away, it is remarked, with three sepa-

Morford's Safety Alarm Cash Till.

these 16 are in the lever and ring design. The Morford Register Company, Allentown, Pa., are introducing a cash till, known as No. 5, as illustrated herewith. The till is described as being made with quartered oak or black walnut fronts, and with sides, back and sliding cash tray for coin also of hard wood. There are eight cups for coin and six divisions for notes and bills, or 14 compartments in all. The tray and

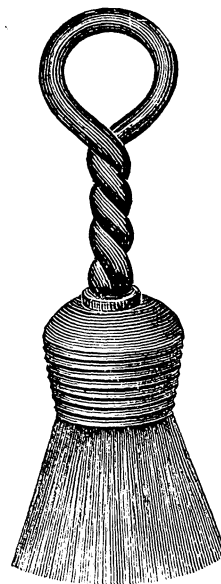
drawers become worn bright and smooth in a short time, so that it can be seen at a glance which keys to use to open the drawer. The tills are made 17 x 18 inches in size, also 13 x 18 inches in size for narrow counters.



Morford's Safety Alarm Cash Till.

Empire Stencil Dauber.

Empire Forge Company, Lansingburg, New York, are introducing a novelty in stencil daubers, as shown

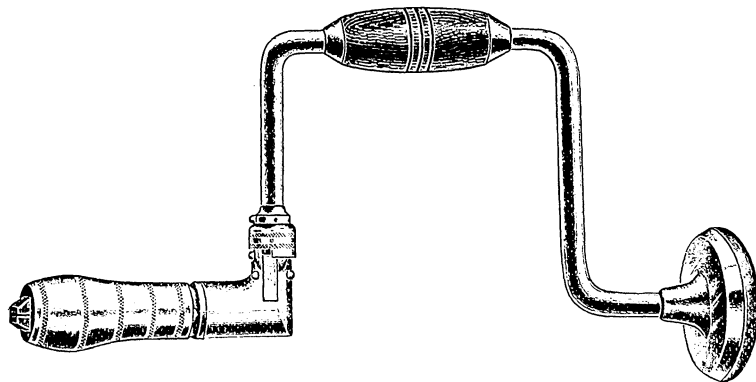


Empire Stencil Dauber.

herewith. The brushes have solid metal handles and ferrules with black bristles. The handles are tinned, and the brushes are packed in paper boxes.

interior of the till are nicely finished and varnished. A 32 combination lock is provided, which can be changed instantly, it is stated, by reversing bolts only. It is remarked that the set of the combination cannot be discovered by the feeling of the finger pulls, which

Lever and Ring Ratchet Brace.



don, Mass. The ratchet is referred to by the makers as being of the well-known lever and ring pattern with some improvements and adaptations. The ratchet wheel and socket are made in one piece of cast steel, thus doing away, it is remarked, with three sepa-

The Eyeless Steel Pick.

The Eyeless Tool Company, New York, are putting on the market eyeless steel picks, shown in the accompanying cuts. The pick is made of one solid bar of steel, having at its center a mal-

arm; that the eyeless pick requires no repointing and need only be drawn out whenever it needs sharpening; that the entire weight of the pick being at the end of the handle allows the operator in striking a blow to get the full advantage of its

Majestic Pattern Flat Ware.

The Majestic pattern shown in the accompanying cut is being used in a full line of goods by the Rogers & Hamilton Company, Waterbury, Conn.

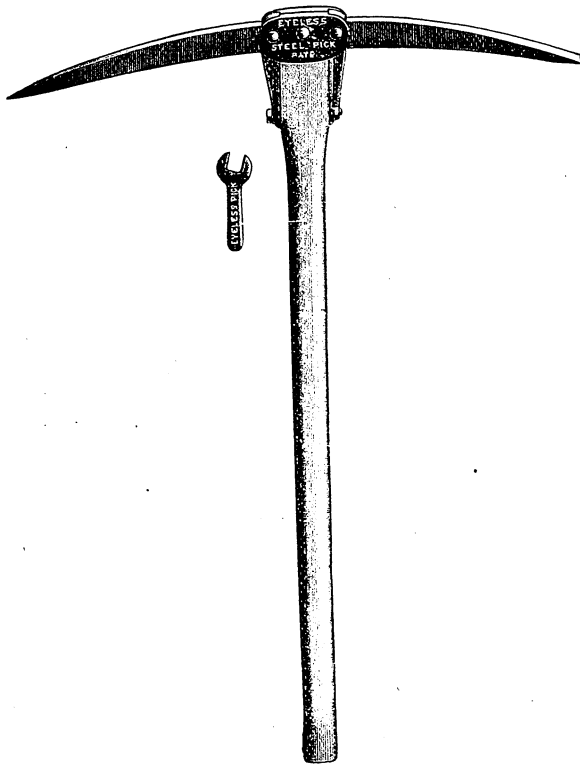


Fig. 1.—The Eyeless Steel Pick.

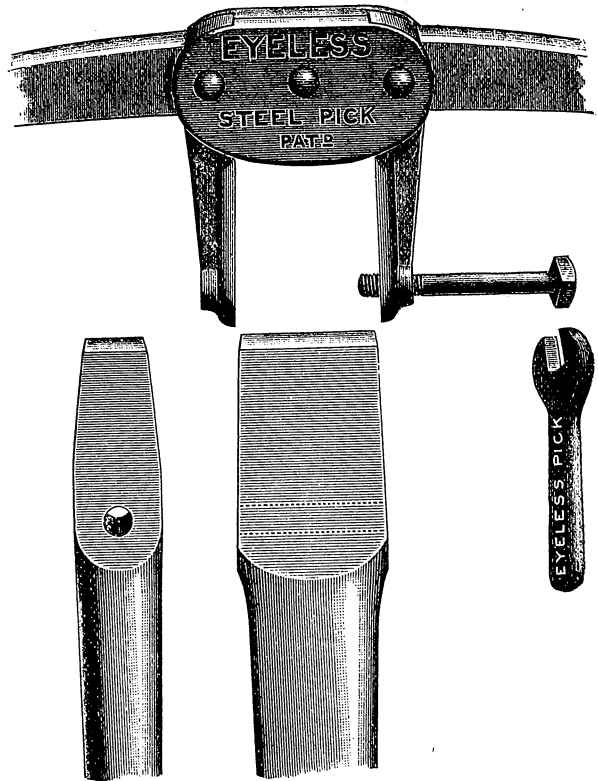


Fig. 2.—Parts of the Eyeless Pick.

leable iron socket. The handle is secured firmly to the pick by a bolt, allowing it to be readily removed when necessary. The edge pieces of the center extend down the sides of the handle for some distance, serving as a protection to the handle, protecting them from

entire weight, and that the pick handle does not require wedging and does not become loose. The manufacturers state that the eyeless pick in wear will equal at least four resteelings of an eye pick, and that by the use of the pick there is a saving of at least 50 per cent. in

The manufacturers in calling attention to the merits of the pattern allude to the boldness and attractiveness of the design, to the smoothness of the outline, and to the fact that every piece is evenly balanced, thereby avoiding the unpleasant feeling to the hand that

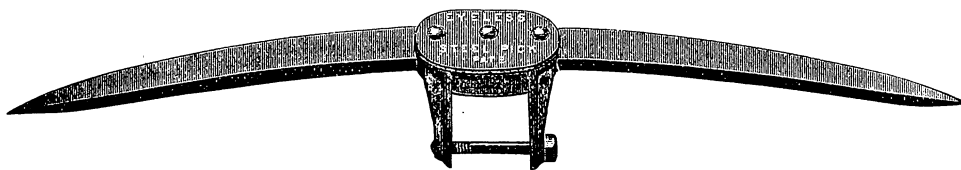


Fig. 3.—Eyeless Clay Pick.

being worn near the pick or being fractured by striking rails, projecting ledges, or other objects near which the pick is being used. The manufacturers claim for the pick that its construction is such as to enable a solid bar of steel to be used, of a grade such as would be impossible to be used in making an eye

handles. The company supply handles ready fitted for the pick at the same prices, according to quality, as the eye pick handles. The makers remark that the pick has been thoroughly tested in every detail and thus gradually developed, until they can confidently assert that it is powerful, substantial and long

many fancy patterns have. The same design is used in a full line of spoons, forks, &c. The makers remark that like all other spoons and forks of their manufacture the Majestic pattern goods are made with their patent spring tempered shank, and are plated in all grades by their sectional process,



Majestic Pattern Butter Spreader.

pick, as such a pick must necessarily be made of a softer material in order to draw the eye; that the pick having no eye, and being made of solid steel, obviates two defects of the ordinary pick, namely, the breaking of the eye and

lived. In addition to those illustrated the following styles of picks are made: Railroad, tamping, bituminous, drifting, bituminous mining, anthracite bottom, anthracite coal and anthracite mining.

which is an extra heavy coating of silver on parts most exposed to wear. The company also put up a Majestic child set, consisting of a knife, fork and spoon, nicely mounted in a box.

Box Strap Seal.

Cary Mfg. Company, 5-9 Elm street, New York, are putting on the market a new box strap seal, to which the accom-

edges of the seal are for the purpose of protecting the name on the sealing strip from abrasion in handling. On one end of the case, Fig. 3, the operation of applying the seal is shown while on

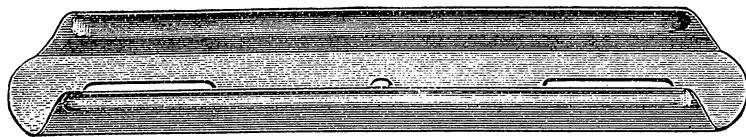


Fig. 1.—Box Strap Seal.

panying cuts relate. The seal consists of a piece of sheet metal about 4 inches long, formed up as shown in Fig. 1,

the other end the operation is shown completed. The device is especially designed for the use of shippers of all

POWELL, SMITH & CO.

Fig. 2.—Sealing Strip of Card Board.

having a round nail hole in the center of the bottom and oblong slots near the ends. The sealing strip, Fig. 2, is of

goods apt to be stolen in transit, as it seals both ends of the strapping around a packing case. It is explained that

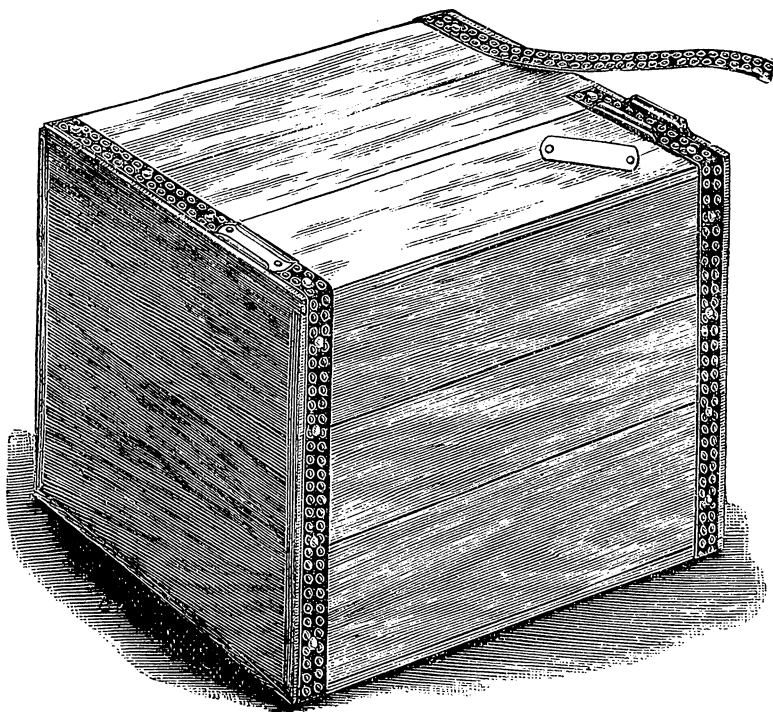


Fig. 3.—Manner of Applying Seal to Packing Case.

soft card board with the name or initial of the shipper printed on it. The seal is for use in connection with the company's universal metal box strapping. When applying the seal the box is first strapped in the ordinary manner, the ends of the straps, however, being left loose, and long enough so that the ends will overlap each other. The seal is fastened to the case where the strap ends overlap by a nail driven through the small hole in the center. The loose ends of the straps are then laid in the seal, over which is placed the sealing strip, the small holes in each end indicating where the nails are to be driven through the strip, both thicknesses of strapping and through the slots near the ends of the seal into the case. The sides of the seal are then closed over and forced down firmly upon the sealing strip by the aid of a closing tool furnished for the purpose. The raised

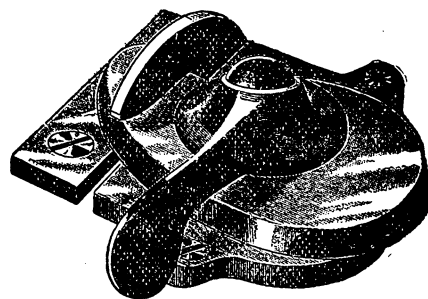
the case or strapping cannot then be tampered with without being readily detected upon receipt by the transpor-

tation lines or consignees. It is stated that with the use of the strap and seal it is impossible to open a case without disturbing the strap and seal, as the strap

covers the heads of the nails in the sides, top and bottom of a case so that they cannot be drawn without tearing away the strap or breaking the seal. We are advised that the chairman of the Trunk Line Association is so favorably impressed with the device that it will be brought before the committee this month, and the company think likely that it will be adopted by all the trunk lines where goods are shipped which are likely to be stolen in transit.

The Gardner Indestructible Steel Sash Lock.

The Gardner Sash Balance Company, 160 Dearborn street, Chicago, are just introducing a sash lock, herewith illustrated, which is a new departure in that line. The new feature is that the latch

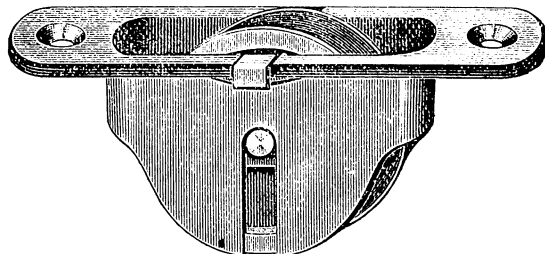


The Gardner Indestructible Steel Sash Lock.

and keeper are stamped from cold rolled steel, thus making the two essential parts absolutely indestructible. The working parts of the lock are so constructed that there can be no wearing out. There are no delicate parts to get out of order, only three pieces being used in its construction—namely, the handle, latch and base plate. The lock is manufactured in all the styles and finishes of general hardware. A descriptive price list will be sent by addressing the company as above.

New Era Axle Sash Pulley.

The cut here shown represents an axle sash pulley put on the market by the Empire Forge Company, Lansingburgh, N. Y. The manufacturers remark that the axle pulley runs perfectly true, being held in position by steel stirrups, and that it has double bearings and a solid case. They state that the pulley has been tested to an equiva-



New Era Axle Sash Pulley.

lent of 30 years' use without showing any wear. The pulleys are made in 1½ and 2 inch sizes, with both plain and ground wheels.

The Remington Hammerless Double Barrel Shot Gun.

Remington Arms Company, Ilion, N. Y.; Hartley & Graham, 313-315 Broadway, New York, agents, are introducing the hammerless double barrel shot gun herewith shown. The gun is made in five grades, with Damascus

hand. Hollow ribs are furnished on all but the cheapest grade of the automatic ejector guns.

Eight-Foot Automatic Self Opening Rolls.

We show in the accompanying illustration automatic self opening rolls, 8

port connected to the opening bar, and therefore the weight of the lower roll at the opposite end will aid in elevating the top roll and help it support it when the formed metal is removed. The construction of the machine furthermore is such that the two feed rolls are in a manner balanced and free to open from end to end with ease. The lower roll is self adjusting and need not be

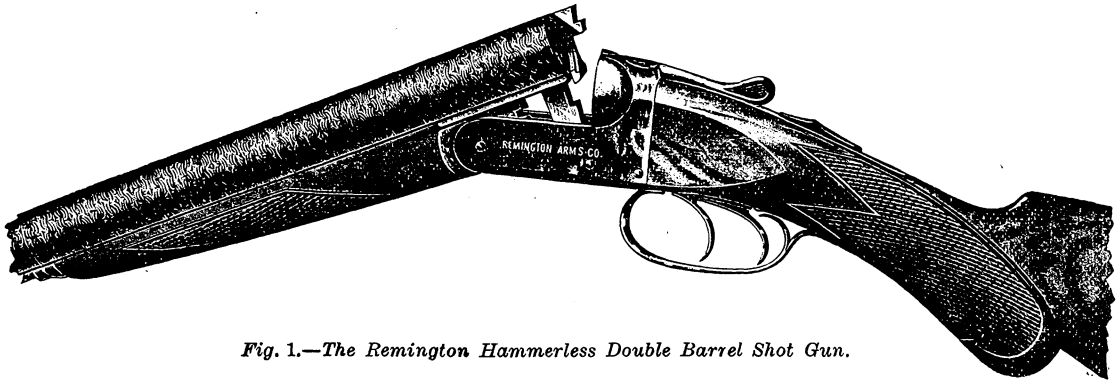


Fig. 1.—The Remington Hammerless Double Barrel Shot Gun.

barrels, choke bored, English walnut stock, half pistol grip, rubber butt plate, checkered fore end, case hardened frame and mountings, automatic safety Purdy fore end snap, triple bolt,

feet in length, which are put on the market by Bertsch & Co., Cambridge City, Ind. The operation of opening the rolls, as shown, can be done by one man in a few seconds, a single operation

altered every time after bending the plate, unless the plate to be formed is either a thicker or thinner one, in which case the lower roll is adjusted as desired at both ends. The rolls are provided

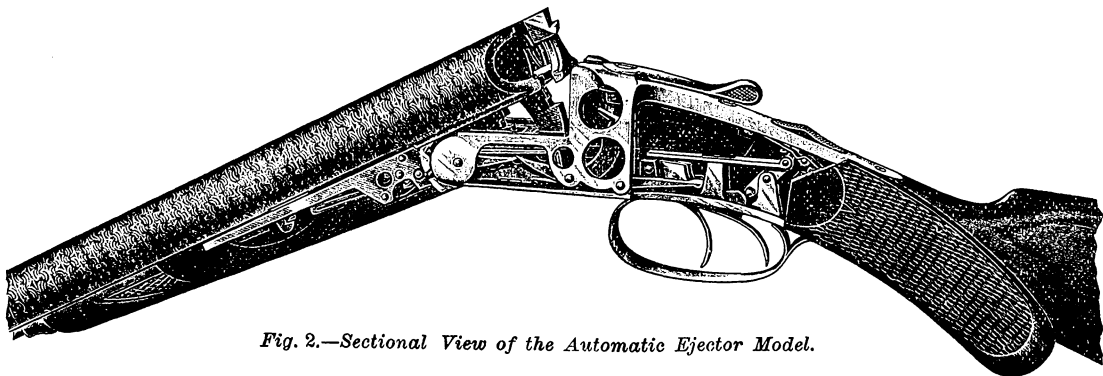
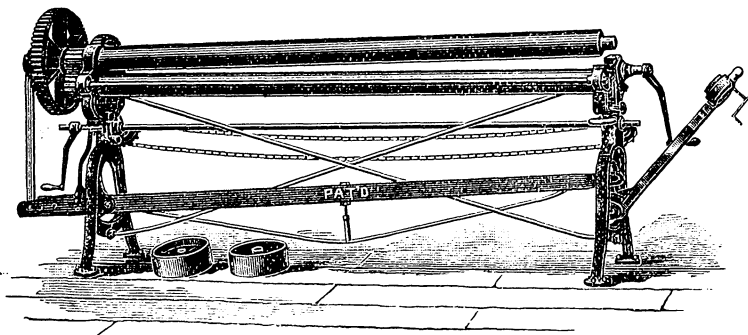


Fig. 2.—Sectional View of the Automatic Ejector Model.

top snap, extension rib with bite, and flat matted rib. The various grades of guns differ in the quality of barrels and the finish of the gun. The guns are made in two styles—automatic ejector and non-automatic ejector, the ex-

almost instantaneously disengaging the bearing buckle, which, when removed and turned back from the top roll journal, will at the same time elevate and support the top roll. It also at the same time lowers the opposite end of

with Messrs. Bertsch & Co.'s improved quick adjustment on the back roll. This attachment is a link belt chain and sprocket wheel on adjusting screws, one or both ends of the back roll being thus adjusted quickly and accurately at one time. For cone or tapering work one end of the roll can be adjusted at any angle by inserting a tapering wedge under the journal box.



Eight-Foot Automatic Self Opening Rolls.

terior appearance of both being the same, as shown in Fig. 1. A sectional view of the automatic ejector model is given in Fig. 2. With this gun the empty shells are thrown out clear of the barrel, while with the non-automatic gun the empty shells are started from the barrels, and are then removed by

the lower feed roll to release a wide plate at the opposite side. The attached bar beneath, the two front rolls, the bearing buckle alluded to and the attached bar are operated conjointly when opening or closing the bearing buckle. The opposite end of the lower feed roll has its journal box and adjusting sup-

Millbury Razor Company.

Millbury Razor Company, Millbury, Mass., recently established, have commenced the manufacture of a line of fine razors, which, they state, are made from highest grade stock and finished with great care. All the product of this concern is hand forged and hand ground and will be put out under trademark "Charles Buck." The company state that none of the cheaper grades of razors will be made, but any style or brand desired will be made to order. The active managers of the new company are Joseph Booth, treasurer, and Thomas Shales, secretary, both of whom have been for a number of years engaged in the manufacture of razors in this country and in England. They have a well equipped shop which will be in running order in a very short time.

The Handy Wagon.

The Handy Wagon Company, Canton, Ohio, are offering the wagon here shown, which is referred to by them as combining all the features of the child's plain wagon and of the velocipede. It is made of steel and malleable iron and is guaranteed by the makers to carry 300 pounds without the slightest strain. It is stated that the steel spindles are all milled, and that all the wheels are reamed, so as to give a perfect fit and to guarantee easy running and durability. To the rear crank axle is attached a pair of pedals, which are detachable, and by adjusting the seat in the bottom of the wagon can be suited in reach to the convenience of children from three to twelve years of age. The tongue is secured in an upright position when using it in this manner, and the wagon



The Handy Wagon.

is guided by the aid of the handle at the side. The makers state that the vehicle is handsome in finish and design, that it is safe, light running, easily controlled, and that it costs less than either a wagon or a velocipede when considered with reference to a child's safety in use, and the strength and durability of the vehicle.

Marlin Repeating Rifles, Model 1894.

In the illustrated description of Marlin repeating rifles, manufactured by the Marlin Fire Arms Company, New Haven, Conn., which appeared in our issue September 27, the cuts of the rifles, Figs. 1 and 2 were inadvertently transposed. The rifle as shown in Fig.

peating rifle. This explanation will remove any confusion in the minds of our readers arising from the change in cuts.

Lane's New Model Parlor Door Hanger.

Lane Brothers, Poughkeepsie, N. Y., for whom John H. Graham & Co., 113 Chambers street, New York, are agents, are offering a parlor door hanger, as illustrated in Fig. 1. All parts of the

practicable to run them out far enough to get at the rear edge of the door, in

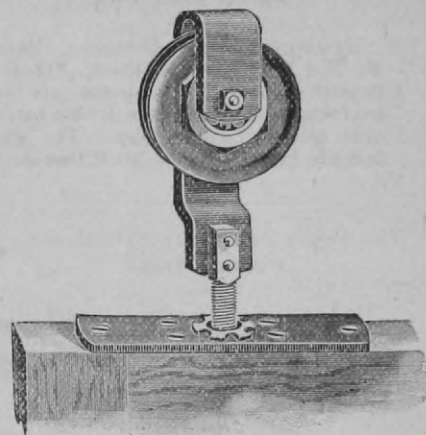


Fig. 1.—Lane's New Model Parlor Door Hanger.

which case the hanger may easily be adjusted from the side by removing the

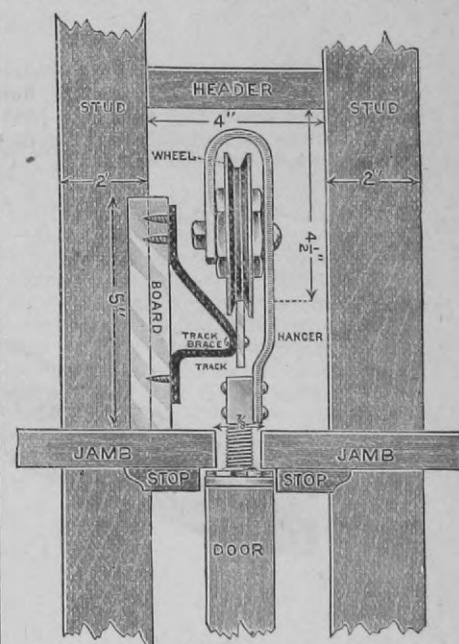


Fig. 2.—Sectional View of Hanger and Track.

stop. It is remarked that another feature lies in the fact that both hangers of

hanger and fixtures are made of steel and are tinned to prevent rusting, while the wheel is fitted with the makers' roller bearings, running on a hard steel bushing to render it anti-friction and avoiding the necessity of oiling. The point is made that the hangers are adapted to any length run, and the wheel has a vulcanized fiber filling to render it noiseless in action. The adjustment of the hanger is referred to by the makers as a novel feature, and may be accomplished from either above or below the base plate as desired. The adjusting nut extends entirely through the plate, having serrated projections or flanges both above and below by which it may be turned, the nut being permanently fastened to the plate so as not to work out or to be lost. It is explained that the hanger may be ad-

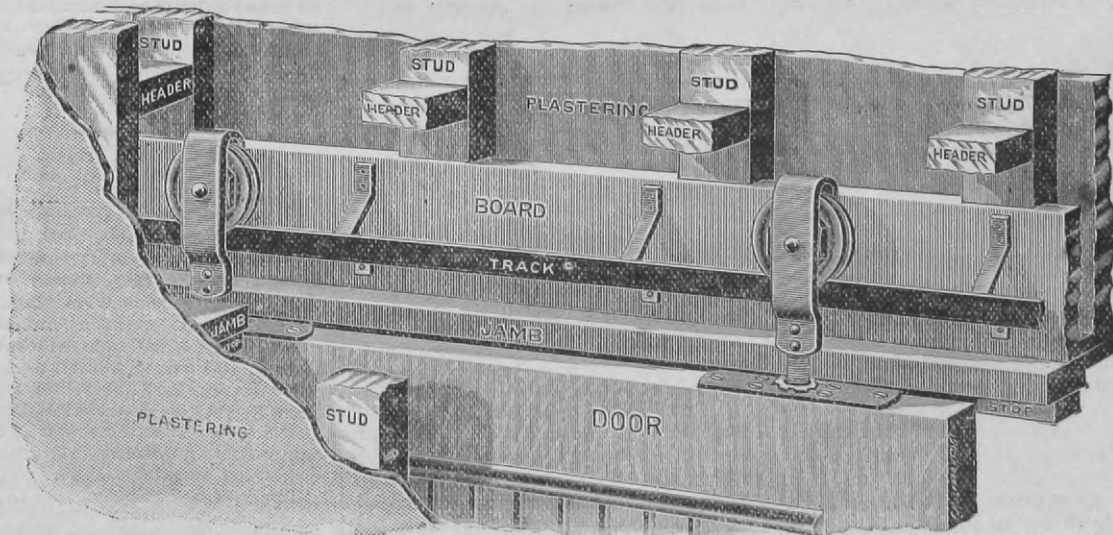


Fig. 3.—Side View of Hanger and Track.

1 is a representation of the Marlin repeater take down, while that shown in Fig. 2 represents the Marlin Safety re-

justed from the end of the door, but that the hanger is particularly well adapted to single doors where it is im-

a pair are alike, consequently there are no rights or lefts. Figs. 2 and 3 represent the manner in which the

hanger and track is applied, the track being finished in Japan. The hanger has been designed and placed on the market by the manufacturers to supply the demand for a thoroughly first-class article at a lower price than the regular Lane Standard parlor door hanger. Prices of the hanger and track are given in this issue under Notes on Prices.

The Gypsy and Trixy Self Heating Curling Irons.

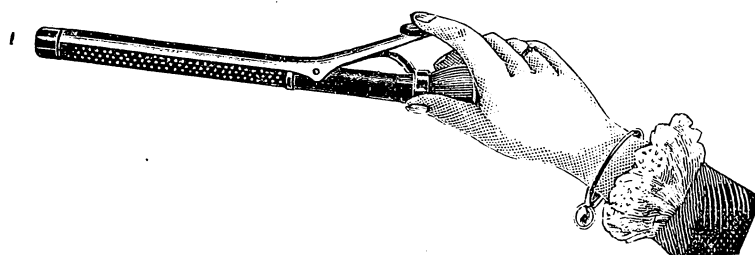
The accompanying cut represents self heating curling irons, introduced by Trixy Hair Curler Company, Cincinnati, Ohio.

The Gypsy and Trixy irons are the same in construction, but different in finish. The curler consists of a light, perforated metal tube, attached to a mandrel, having a small opening through its entire length; this in turn being connected to a rubber bulb, which serves as a handle. A chemical compound, known as a "carbon," of a round oblong form, supplies the heat. The perforated tube contains a spiral wire holder in which the carbon is placed, the holder being inserted after removing the metal cap from the end of the tube. In operation the carbon is

there are no vexatious delays encountered in reheating or from overheating; that the temperature may always be kept the same and that they do not burn nor scorch the hair. The point is made that as a traveling companion for ladies they are invaluable. The Gypsy is of plain bright steel finish, while the Trixy is nickel plated and provided with a plush finger piece. The curlers are each packed in a box with 25 carbons.

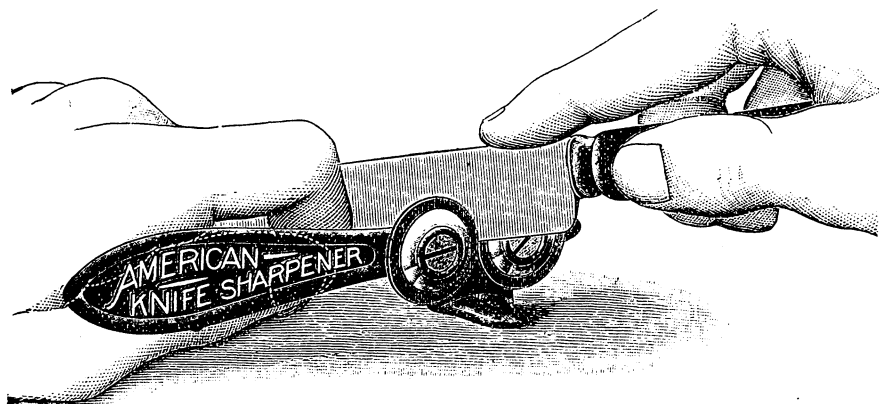
American Knife Sharpener.

Mossberg Wrench Company, Attleboro, Mass., are offering a knife sharpener, as shown in the accompanying



The Gypsy and Trixy Self Heating Curling Irons.

illustration. The manufacturer remarks that the essential feature of the sharpener is the butting up together of the steel washers, making the two edges of the cutters directly opposite each other, and that they do not overlap. The steel washers may be revolved to present new cutting surface by loosening the screws. With the sharpener, the manufacturers state, a razor edge may be given to knives. Shears are sharpened by using the projecting end furthest from the handle to rest the blade on. The company furnish the sharpener nicked, japanned or tinned;



American Knife Sharpener.

lighted in the holder and placed in the perforated tube. The metal cap is replaced and the bulb is compressed rapidly a half dozen times or more while the carbon is igniting. The bulb is occasionally compressed while the hair is being curled to keep the curler at the right temperature. One carbon, it is remarked, provides sufficient heat to meet all ordinary requirements for curling at one time. The manufacturers state that the curlers are quick in operation, simple in construction, convenient in use, cheap, clean and practical; that they will never become smutty, corroded nor out of order; that they will never burn out; that

they also make the article in silver and silver plate.

Chas. L. Bailey & Co., Harrisburg, Pa., have contracted with Craig Ridgway & Son of Coatesville, Pa., for one of their steam-hydraulic machines, which is somewhat of a novelty. The jib is made sufficiently long to reach all the way across the mill and out into the yard. This long jib has a vertical motion of 8 feet. The goods are deposited under the jib, by which they are then lifted and quickly run out into the yard, where they are deposited. To install this machine requires the cutting of an opening in the building.

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Current Hardware Prices.

OCTOBER 3, 1894.

NOTE.—The quotations given below represent Current Hardware Prices, whether made by manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail Hardware merchants. Very small orders and broken packages often command higher prices.

The character @ is used to indicate a range of price; thus discount 50 & 10% @ 50 & 10 & 5%, signifies that the goods in question are sold at prices ranging from 50 & 10% to 50 & 10 & 5%.

Adjusters, Blind—

Domestic.....\$ doz \$3.00, 83% @ 83% & 10%
 Excelsior.....\$ doz \$10.00.....50 & 10 & 2%
 Zimmermann's—See Fasteners Blind.

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—

American—

Eagle Anvils, \$ 10 @ 15 @ 15%
 Horse shoe brand, Wrought.....9% @ 10%
 Moore & Barnes Mfg. Co.....3% @ 4%

Imported—

Armstrong Mouse Hole.....8% @ 9%
 S. & H., machine finished.....9% @ 10%
 Trenton.....9% @ 10%
 Peter Wright's.....9% @ 10%
 9% @ 10%
 9% @ 10%

Anvil Vise and Drill—

Allen Anvil and Vise \$3.00.....40 & 10%
 Cheney Anvil and Vise.....25%
 Millers Falls Co., \$18.00.....20%
 Holt's.....40 & 40 & 10%

Apple Parers—See Parers Apple, &c.

Augers and Bits—

Boring Machine Augers.....70 & 70 & 10%
 Car Bits, 12-in. twist.....50%
 Common Augers and Bits.....70 & 70 & 10%
 Cincinnati Bell Stang's Bits.....80 & 10%
 Worthington Pat. Auger Bits.....25%
 Jennings' Pattern Car Bits.....40%
 Jennings' Pattern Auger Bits.....40%
 J. E. Jennings & Co., No. 10, extension
 tip.....80%
 C. E. Jennings & Co., No. 30.....80%
 O. E. Jennings & Co. Auger Bits, 1/2 set
 32% quarters, No. 5, 35; No. 30, 35.50, 25%
 Russell Jennings' Augers and Bits 25 & 10%
 Lewis' Patent Single twist.....45%
 L'Hommedieu Car Bits.....15 & 10%
 Fugh's Black.....20%
 Fugh's Jennings Pattern.....30%
 Snell's Bits.....60 & 50 & 60 & 10%

Bit Stock Drills—

Cleveland.....50 & 10 & 5%
 Cincinnati, for wood.....40 & 10%
 Cincinnati, for metal.....50 & 10%
 Morse Twist Drills.....50 & 10 & 5%
 New Process Twist Drill Co.....50 & 10 & 5%
 Standard.....50 & 10 & 5%
 Syracuse, for metal.....50 & 10 & 5%
 Syracuse, for wood (wood list) 50 & 10 & 4%

Expansive Bits—

Clark's small, \$18; large, \$26.....40 & 40 & 5%
 Ives' No. 4, \$20.....40 & 40 & 10%
 Stearns' No. 1, \$20; No. 2, \$18.....40 & 40 & 5%
 Stearns' No. 2, \$48.....20%
 Swan's.....40 & 40 & 10%

Gimlet Bits—

See.....25 & 25 & 10%
 Common.....\$ gross \$2.50 @ \$3.00
 Diamond.....\$ doz \$1.25.....40 & 10%
 Double Cut.....40 & 10%
 Hartwell's.....\$ gro, \$10.00, 40 & 10%
 Douglass's.....40 & 10 & 50%
 Ives.....60 & 10 & 60 & 10 & 5%
 Shepardson's.....45 & 10 & 45 & 10 & 5%

Hollow Augers—

Bonney's Adjustable, \$ doz \$48.....50%
 Cincinnati Adjustable.....25 & 10%
 Cincinnati Standard.....25 & 10%
 Douglass's.....33% @ 33% & 10%
 French, Swift & Co. (Becherer).....33% @ 33% & 10%
 Ives'.....33% @ 33% & 10%
 Ives' Expansive, each \$4.50.....20 & 10%
 Stearns'.....20 & 10%
 Universal Expansive, each \$4.50.....20%
 Wood's, \$ doz, \$48.....25 & 10%

Ship Augers and Bits—

L'Hommedieu's.....15 & 10 & 15 & 10 & 5%
 Snell's.....25 & 25 & 10%
 Snell's Ship Auger Pattern Car Bits.....15 & 10 & 15 & 10 & 5%
 Watrous's.....25 & 25 & 10%

Awl Hafts—See Hafts, Awl.

Awls—

Brad, Handled.....\$ gr. \$2.50 @ \$3.00
 Brad, Shouldered.....\$ gr. \$1.50 @ \$1.40
 Peg, Pat.....\$ gr. \$5 @ \$5
 Peg, Shouldered.....\$ gr. \$1.50 @ \$1.55
 Scratch, Handled.....\$ gr. \$4.00 @ \$4.50
 Scratch, Socket.....\$ doz. \$1.10 @ \$1.20

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

First quality, best brands.....\$6.00 @ \$6.50
 First quality, other brands.....5.50 @ 6.00
 Beveled add 50¢ @ doz.

Axle Grease—See Grease, Axle.

Axles—

No. 1 Common.....3¢ @ 3 1/2¢
 No. 2 Common.....4¢ @ 4 1/2¢
 Nos. 7 to 14.....70%
 Nos. 15 to 28.....60 & 5%
 Nos. 19 to 22.....70%
 Concord Axles, loose collar.....3% cash
 Concord Axles, solid collar.....4¢ @ 4 1/2¢
 Tubular Axles.....5¢ @ 5 1/2¢

Bag Holders—See Holders, Bag.

Balances—

Sash—
 Caldwell, low list.....30%
 Pullman.....80%
 Sensible.....60%
 Spring—
 Spring Balances.....40 & 10 & 50%
 Chatillon, No. 2000.....20 80
 Chatillon, \$ doz.....\$0.80 0.95 1.75 net
 Chatillon Straight Balances.....40 & 40 & 10%
 Chatillon Circular Balances.....50 & 10%

Barb Wire—See Wire, Barb.

Bars—

Crow—
 Cast Steel.....\$ 2 1/2 @ 3¢
 Iron, Steel Points.....\$ 2 1/2 @ 2 1/4¢

Basins, Wash—

Standard Fiberglass, No. 1, 10 1/2 in., \$1.80;
 12-in. \$2.00; 13 1/2 in., \$2.50.

Beams Scale—

Scale Beams, List Jan. 12, '82.....50 & 10 & 50 & 10 & 5%
 Chatillon's No. 1.....35% 40%
 Chatillon's No. 2.....50 & 10 & 50 & 10 & 5%
 Ousters.....33% 40%

Beaters—

Egg—
 Bryant's.....\$ gross \$14.00
 Double (H. & R. Mfg. Co.).....\$ gro, No. 10
 \$12.00; No. 1, \$15.00; No. 2.....\$39.00
 Dover.....\$ doz \$1.00; \$ gro, \$10.50
 Dover, Ex. Family Size.....\$ doz, \$3.50
 Dover (Standard Co.).....\$ doz \$1.00
 Duplex (Standard Co.).....\$ doz \$1.00
 Duplex Extra Heavy (Standard Co.).....\$ doz, \$3.50
 Easy (H. & R. Mfg. Co.).....\$ gro \$12.00
 Improved Acme (H. & R. Mfg. Co.).....\$ gro \$9.00
 Silver & Co.....\$ doz \$5.50
 Spiral.....\$ gro \$2.50 @ \$4.50
 Triple (H. & R. Mfg. Co.).....\$ gro \$18.50

Culinary

Keystone, P. D. & Co., Each, No. 1, \$1;
 No. 2, \$2.....20%

Bells—

Cow—
 Common Wrought.....60 & 10%
 Kentucky Durham.....70 & 10%
 Kentucky, Sargent's list.....70 & 10%
 Kentucky, "Star".....20 & 10%
 Texas Star.....50 & 10 & 50 & 10 & 5%
 Western, Sargent's list.....70 & 10%

Door—

Crank, Brooks's.....50 & 10 & 2%
 Crank, Cone's.....10%
 Crank, Connel's.....20 & 10%
 Gong, Abbe's.....40 & 10 & 10%
 Gong, Barton's.....40 & 10 & 10%
 Gong, Yankee.....45 & 10%
 Lever, R. & E. Mfg. Co.'s.....50 & 10 & 2%
 Lever, Sargent's.....60 & 10%
 Lever, Taylor's Bronzed or Plated.....net
 Lever, Taylor's Japanned.....25 & 10%
 Pull, Brook's.....50 & 10 & 2%

Electric—

Bigelow & Dowse.....20 @ 20 & 10%
 Wellensak's.....20 @ 20 & 10%

Hand—

Extra Heavy Brass.....70%
 Light Brass.....70 & 10 & 70 & 10 & 5%
 Silver Chime.....35 & 10%
 White, Barton's.....40 & 10 & 10%
 Globe Cone's Patent.....25 & 10 & 35%

Miscellaneous—

Call.....45 & 50%
 Fawn Bells.....\$ 2 1/2 @ \$2 1/4¢
 Steel Alloy Church and School Bells.....50%
 Blacksmith's.....60 & 10 & 70%
 Hand Bellows.....50 & 10 & 10%
 Molders.....50 & 50 & 10%

Belting, Rubber—

Common Standard.....75 & 10 & 75 & 10 & 5%
 Extra.....60 & 10 & 50 & 70%
 Standard.....70 & 10 & 75%
 N. Y. B. & F. Co., Carbon.....60 & 10 & 5%
 N. Y. B. & F. Co., Double Diamond.....60%
 N. Y. B. & F. Co., 1846 Para.....40 & 10%

Bench Stops—See Stops, Bench

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender 15 @ 15 & 10%
 Green River Tire Benders and Upsetters.....20%
 Stoddard's Lightning Tire Upsetters.....15%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.,
 see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Cleveland Block Co., Mal. Iron.....50 & 10 & 60 & 10%
 Moore's Novelty, Mal. Iron.....50 & 50 & 5%
 Sura Grip Steel Tackle Blocks 2¢ @ 2 1/2¢ @ 10¢
 See also Machines Hoisting.

Boils—

Carriage, Machine, &c.—

Com. list June 10, '84.....80 & 20 @ 80 & 25%
 Genuine Eagle, Norway, list Oct. '84.....80 & 5 @ 80 & 10%
 Eagle, Norway, list Oct. '84.....80 & 5 @ 80 & 10%
 Phila. & W., old list.....80%
 Bolt Ends, list Jan. 1, 1890, 80 & 20 @ 80 & 2%
 Machine, list Jan. 1, 1890.....80 & 25%

Door and Shutter—

Cast Iron Barrel Square, &c.....75 & 10 @ 75 & 10 & 5%
 Cast Iron Chain (Sargent's list).....65 & 10 @ 65 & 10 & 5%
 Cast Iron Shutter Bolts.....50 & 10 @ 50 & 10 & 5%
 Ives' Patent Door Bolts.....60 & 10 @ 60 & 10 & 10%
 Wrought Barrel.....75 & 10 @ 80%
 Wrt B. K. Flush Common.....60 & 10 @ 60 & 10 & 10%
 Wrt Shutter, Brass Knob.....50 & 10 @ 50 & 10%
 Wrt Shutter, Sargent's list.....60% @ 70%
 Wrt Shutter, all Iron, Stanley's.....60% @ 70%
 Wrought Square.....75 & 10 @ 80%
 Wrt Sunk Flush, Sargent's list.....60 & 10%
 Wrt Sunk Flush, Stanley's list.....60 & 10%

Stove and Plow—

Plow.....60 & 10 @ 60 & 10 & 10%
 Stove.....65 @ 7¢ & 5%
 R. B. & W., Plow.....65%

Tire—

Common, list Feb. 28, '83.....70 & 10%
 American Screw Company.....70 & 10%
 Norway, Phila., list Oct. 16, '84.....75 & 10%
 Eagle, Phila., list Oct. 16, '84.....80 & 10%
 Ray's Patent, list Feb. 28, '83.....70 & 10%
 Franklin Moore Co.....70 & 10%
 Norway, Phila., list Oct. 16, '84.....75 & 10%
 Eagle, Phila., list Oct. 16, '84.....80 & 10%
 Eclipse, list Feb. 28, '83.....70 & 10%
 Port Chester Bolt and Nut Company.....70 & 10%
 Empire list Feb. 28, '83.....70 & 10%
 Keystone, Philadel., list Oct. '84.....80 & 10%
 Norway, Phila., list Oct. '84.....75 & 10%
 R. B. & W., Philadel., list Oct. 16, '84.....75 & 10%

Borers, Tap—

Common and Ring.....20 & 10%
 Clark's.....35% @ 35%
 Enterprise Mfg. Co.....25%
 Ives' Tap Borers.....33% @ 35%

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Letter—

Tatum's.....40

Boxes, Wagon—

Per B.....29%

Boxes, Miter.

Spilker's Excelsior, 3 in. \$7.50, 4 in.
 \$8.50, 5 in. \$13.00, 6 in. \$15.00.....20%

Braces—

NOTE.—Most Braces are sold at net prices.

Barber's.....50 & 10%
 Armstrong's.....50 & 5%
 Common Ball, American.....\$1.00 @ \$1.10
 Davis Patent.....50 & 10%
 Fray's Patent.....50 & 10%
 Fray's Nos. 70 to 120, 81 to 125, 207 to 414
 50 & 10 & 5%
 Ives' New Haven Novelty.....70 & 70 & 5%
 New Haven Ratchet.....60 & 5 @ 60 & 10%
 Barber Ratchet.....80 & 5 @ 80 & 10%
 Barber's.....60 & 5%
 Spoda's Patent.....60 & 5 @ 60 & 10%
 P. S. & W. Co. Peck's Patent.....60%
 Rose & Johnson.....60%

Brackets—

Shelf, fancy.....70 & 70 & 10%
 Sargent's list.....70 & 70 & 10%
 Other makes at a wide range of prices.
 Shelf, plain.....65 & 70%
 Regular, list.....60 & 10 @ 70 & 10%
 Sargent's list.....60 & 10 @ 70 & 10%
 Bradley Shelf Brackets.....75%

Bright Wire Goods—See Wire.

Brollers—

Hens' Self-Inch.....0 10 9x11
 Basting, \$ Per doz.....\$4.50 5.50 6.50
 Morgan Odorless.....\$ doz \$12, 50%
 New Haven.....60%
 Wire Goods Co.....65 & 10%

Buckets, Well and Fire—

See Pails.

Bull Rings—See Rings, Bull.

Butcher's Cleavers—See Cleavers, Butchers.

Butts—

Brass—
 Cast Brass, Fast.....33% & 10%
 Cast Brass, Loose Joint.....33% & 10%
 Cast Brass, Tiebout's.....50%
 Wrought Brass.....80 & 10 @ 80 & 20%
 Cast Iron—
 Fast Joint, Broad.....60 & 10 @ 60 & 10%
 Fast Joint Narrow.....60 & 10 @ 60 & 10%

Loose Joint.....75 & 10 @ 80%
 Loose Joint, Jap. with Acorns.....
 Loose Pin, Acorns.....
 Loose Pin, Acorns, Japanned.....
 Loose Pin, Acorns, Japanned,
 Plated Tips.....
 Mayer's Hinges.....
 Parliament Butts.....

Wrought Steel—

Fast Joint, Broad.....
 Fast Joint, Narrow.....
 Fast Joint, Lt. Narrow.....
 Inside Blind, Light.....
 Inside Blind, Regular.....
 Loose Joint, Broad.....
 Loose Pin.....
 Table Butts, Back Flaps, &c.....
 Bronzed Wrought Butts.....50 & 10 @ 50 & 10 & 5%

Cages, Bird—

Hendryx Brass:
 3000, 5000, 1100 series.....10%
 1200 series.....40%
 200, 300, 600 and 900 series.....40 & 10 @ 50%
 Hendryx Bronze:
 700, 800 series.....40 & 10 @ 50%
 Hendryx Enamelled.....40 & 10 @ 50%

Calipers—See Compasses.

Calks—

Burke's One Prong, Blunt.....4¢ @ 5¢
 Burke's One Prong, Sharp.....5¢ @ 6¢
 Burke's Two Prong, Blunt.....5¢ @ 6¢
 Burke's Two Prong, Sharp.....6¢ @ 7¢
 Gautier One Prong, Blunt.....5¢ @ 6¢

CanOpeners—See Openers, Can.

Cans Milk—
 S. & Co., 5-gal., \$3.00; 8-gal., \$4.40;
 10-gal., \$4.75 each.....40 & 10

Cans Oil—

Galvanized Blue Band, 1 gal., \$ doz. \$3.33
 Galvanized Blue Band, 5 gal., Tip-Top,
 \$ doz. \$12.00
 Galvanized Blue Band, 5 gal., Faucet,
 \$ doz. \$3.00
 Glass Oil, Friend.....\$ doz. \$3.75

Caps—Percussion—

Eley's E. B.....66 & 55¢
 Eley's D. Waterproof, Central Fire.....\$1.00
 Hicks & Goldmark's and Union Metallic
 Cartridge Co.....
 E. B. Grund, Edge, Cent. Fire, 1-10' & 47' 50"
 E. B. Trimmed Edge, 1-10'.....47' 50"
 F. L. Waterproof, 1-10'.....85¢ @ 97¢
 G. D.....27¢ @ 30¢
 Musket, Waterproof, 1-10'.....60¢ @ 65¢
 S. B. Genuine Imported.....45¢

Primers—

Berdan Primers.....25¢
 B. L. Caps (Surtivant Shells) \$1.00.....25¢
 All other Primers, \$1.20.....25¢

Cards—

Watson's Cotton, Wool, Horse and
 File, list January 28, 1891.....

Carpet Stretchers—

See Stretchers, Carpet.

Cartridges—

B. B. Caps, Conf. Ball, Swgd., \$1.85 @ \$1.90
 B. B. Caps, Round Ball, \$1.90 @ \$1.95
 Blank Cartridges, except 25 and 32 cal.,
 additional 10% to above discounts
 Blank Cartridges, 22 cal. \$1.75.....25¢
 Blank Cartridges, 32 cal. \$5.50.....35¢
 Cent. Fire, Military and Sporting 15¢ @ 25¢
 Cent. Fire, Pistol and Rifle.....25¢ @ 35¢
 Primed Shells and Bullets.....15¢ @ 25¢
 Rim Fire Cartridges.....60¢ @ 65¢
 Rim Fire Military.....15¢ @ 25¢

Carpet Sweepers—

See Sweepers, Carpet.

Casters—

Bed.....
 Plate.....60 & 10 @ 60 & 10 & 10%
 Shallow Socket.....
 Deep Socket.....60%
 Giant Truck Casters.....85%
 Gwiner's Common.....45¢ @ 50¢
 Gwiner's Hercules.....45¢ @ 50¢
 Martin's Patent (Phoenix) 45¢ @ 60 & 10%
 Payson's Anti-friction.....70 & 70 & 10%
 Payson's Truck.....60 & 8

Chalk Lines—See Lines.

Checks, Door—
 Bardsley's.....20%
 Unity.....50%

Chisels—
Socket Framing and Firmer
 Ohio Tool Co.....75¢@80¢
 P. S. & W.
 Witherby.....30%
 Buck Bros.....30%
 Charles Buck.....30%
 Douglass.....75¢@78¢10¢
 Merrill.....60¢@10¢@50¢@80¢
 L. & J. White.....30¢@30¢@5¢

Tanged and Miscellaneous—
 Buck Bros.....30%
 Charles Buck.....30%
 Butchers.....\$4.75@5.00 to 2
 Spear & Jackson's.....\$5 to 2
 Tanged Firmer.....50¢@50¢@5¢
 L. & J. White.....55¢@5¢
 Cold Chisels, fair quality, # 2.....14¢@16¢

Chucks—
 Beech, each.....\$8.00.....20%
 Danbury.....each, \$6.00, 30¢@30¢5¢
 Graham Patent.....39¢@4¢
 Morse's Adjustable, each, \$7.00, 20¢@20¢5¢
 Syracuse, Bais Pat.....25%
 Skinner Patent Chucks.....40%
 Combination Lathe Chucks.....40%
 Drill Chucks.....25%
 Independent Lathe Chucks.....40%
 Planer Chucks.....20%
 Universal Lathe Chucks.....40%
 Union Mfg. Co.....40%
 Combination.....40%
 Independent.....40%
 Universal.....40%
 Victor.....\$8.50, 25%

Churns—
 McDermald Star Barrel Churn, each 8 gal., \$2.60; 10 gal., \$2.75; 15 gal., \$3.00; 20 gal., \$3.25.
 Timm Union, each 5 gal. \$3.25; 7 gal., \$3.75; 10 gal., \$4.25.

Clamps—
 Adjustable, Cincinnati.....25¢@10¢5¢
 Adjustable, Hammers.....15¢@15¢5¢
 Adjustable, Stearns's.....30¢@30¢10¢
 Barnes' Machinists' Clamps.....39¢@4¢
 Cabinet, Sargent's.....70¢@10¢
 Carpenter's, Cincinnati.....25¢@10¢
 Carriage Makers', P. S. & W. Co.....40¢@10¢
 Oarriage Makers', Sargent's.....75¢@75¢5¢
 Eberhard Mfg. Co.....40¢@50¢@10¢
 Joiners' Clamps, Tatum's.....25¢@10¢
 R. L. Tool Co.'s Wrought Iron.....25%
 Saw Clamps, each 1/2 in. Saw Filer's.....70¢@10¢
 Stearns' Malleable, with Wrought Iron Screw.....75¢@75¢5¢
 Stearns' Steel.....25%
 Warner's.....40¢@10¢@10¢@5¢

Cleavers, Butchers—
 Beatty's.....40¢@50¢@10¢
 Bradley's.....25¢@30¢
 Foster Bros.....30%
 New Haven Edge Tool Co.'s.....40%
 Nichols Bros.....30%
 P. S. & W.....39¢@25¢@39¢@10¢
 Schulte, Lohoff & Co.....40¢@25¢
 L. & J. White.....25%

Clips—
 Baker Axle Clips.....25¢@10¢
 Norway Axle.....50¢@10¢@70¢
 Norway Spring Bar Clips.....50¢@10¢@70¢
 24 grade Norway Axle.....70¢@50¢@10¢
 Steel Felloe Clips.....\$1.00@1.10
 Superior Axle Clips.....70¢@70¢5¢
 Wrought Iron Felloe Clips, # 1, 4, 4 1/2
Cloth and Netting, Wire—
 See Wire, etc.

Cocks, Brass—
 Hardware List (Globe, Kerosene, Lever, Bibbs, Racker, etc.).....80¢@20¢@10¢

Coffee Mills—See Mills, Coffee.
Collars Dog—
 Brass, Pope & Stevens's list.....40%
 Chapman Mfg. Company, new list.....40%
 Embossed, Glt, Pope & Stevens's list.....40%
 Leather, Pope & Stevens's list.....40%
 Medford Fanny Goods Co.....40¢@10¢@50¢

Combs Curry—
 American Curry Comb.....39¢@40¢
 Fitch's.....50¢@10¢@50¢@10¢
 Gibb's Magnetic.....\$2.00
 Kohler's Humane.....\$2.00
 Kohler's Magic Oscillating.....\$2.00
 Rubber, per doz., \$10.00.....25%

Compasses, Dividers &c.
 Compasses, Callipers, Dividers, 70¢@10¢75¢
 Bennis & Call Co's
 Dividers.....65%
 Callipers, Call's Patent Inside.....55%
 Callipers, Double.....65%
 Callipers, Inside or Outside.....65%
 Callipers, Wing.....60%
 Compasses.....60¢@5¢
 Starrett's Combination Dividers.....25%
 Look Callipers and Dividers.....25%
 Spring Callipers and Dividers.....25¢@10¢
 Stevens & Co's.....25¢@10¢

Coolers, Water—
 S. S. & Co.: 2-gal., \$3.50; 3-gal., \$4.00; 4-gal., \$4.50; 5-gal., \$5.00 each.....00%

Coopers' Tools—
 See Tools, Coopers'.

Cord Sash—
 Braided, Crown Drab and Fancy, # 1, 55¢
 Braided, Crown White, # 1, 50¢
 Cable Laid Italian Sash.....\$1.00@20¢
 Common.....\$1.00@20¢
 Common Russia Sash.....\$1.25@15¢
 Egyptian, India Hemp, Braided.....\$1.25@15¢
 India Cable Laid Sash.....\$1.10@15¢
 Massachusetts, White.....22¢@24¢
 Ossawaun Mills—
 Crown, Solid Braided White, # 1, 22¢
 Crown, Drab and Fancy, # 1, 22¢
 Braided Giant, Drab and Fancy, # 1, 30¢
 Braided, Giant, White.....\$1.20@15¢
 Patent, good quality.....\$1.10@15¢
 Patent Russia Sash.....\$1.15@14¢
 Samson—
 Braided, Drab Cotton.....\$1.42¢
 Braided, Italian Hemp.....\$1.40¢
 Braided, Linen.....\$1.50¢
 Braided, White Cotton.....\$1.87¢
 Semper Idem, Braided, White.....20¢
 Silver Lake—
 A quality, Drab, 55¢.....25%
 A quality, White, 50¢.....25%
 B quality, Drab, 85¢.....10%
 B quality, White, 80¢.....10%
 Sylvan Spring, Extra Braided, Drab.....39¢
 Sylvan Spring, Extra Braided, White.....34¢

Tate's Solid Braided—
 Economy Drab.....\$1.47¢
 Economy, White.....\$1.52¢
 Hercules, Drab.....\$1.50¢
 Hercules, White.....\$1.55¢
 White Cotton Braided, fair, # 1, 30¢@34¢
Wire Picture—
 Braided or Twisted.....80¢@10¢@80¢20¢
Corkscrews—See Screws, Cork.
Corn Knives and Cutters—
 See Knives, Corn.

Crackers, Nut—
 Acme.....Japanned, # gro., \$30.....50%
 Nickel Plated, # gro., \$30.....3%
 Fancy Nickel Plated, # gro., \$30.....40%
 Table (L. & B. Mfg. Co.).....50%
 Turner & Seymour Mfg. Co.....50%

Cradles—
 Grain.....50¢@20¢@50¢@25¢
Crayons—
 White Crayons, # gross.....60¢@1¢
 Cases, 100 gr., \$3.75@4.25, at factory.
 D. M. Steward Mfg. Co.:
 Metal Workers', # gross, \$2.50, 20¢@25%
 Road, # gross, \$2.00, 20¢@25%
 Rolling Mill, # gross, \$2.50, 20¢@25%
 Soapstone Pencils, # gross, \$1.50, 20¢@25%
 See also Chalk.

Creamery Pails—See Pails, Creamery.
Crow Bars—See Bars, Crow.
Curry Combs—
 See Combs, Curry.

Cutters—Meat—
 American.....1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100
 Nos.....\$5 \$7 \$10 \$25 \$50 \$80
 Enterprise.....10 12 22 32 42
 Each.....\$3 \$2.50 \$4 \$6 \$15
 Dixon's, # doz.....\$14.00 \$17.00 \$19.00 \$30.00
 Nos.....\$14.00 \$17.00 \$19.00 \$30.00
 Draw Cut, each:
 Nos. 2 6 8
 \$50 \$75 \$80 \$235.....20¢@25%
 Hale's, # doz.....70¢@70¢5¢
 Nos.....11 13 18
 Home No. 1, # doz.....\$27.00 \$38.00 \$45.00
 Little Giant, # doz.....\$26.00 \$35.00 \$45.00
 Nos. 305 310 312 320 322
 \$35.00 \$48.00 \$44.00 \$72.00 \$68.00
 Miles' Challenge, # doz.....\$45¢@45¢10¢
 Nos.....1 2 3 4
 Triumph No. 505, # doz.....\$22.00 \$30.00 \$40.00
 Woodruff's, # doz.....\$21.00 \$25.00 \$30.00
 Nos.....100 150
 \$15.00 \$18.00
 Chaborn's Smoked Beef Cutter, # doz., \$66.00
 Enterprise Beef Shavers.....20%

Slaw and Kraut—
 Tucker Doresey Mfg. Co.:
 Kraut Cutters, # gross.....40%
 Slaw Cutters, 1 Knife, # gross.....\$21.00
 Slaw Cutters, 2 Knife, # gross.....30.00

Tobacco
 Aome.....# doz., \$20.00, 40%
 All Iron.....# doz., \$4.00
 Champion.....# doz., \$20.00@80%
 Lincoln Lock Co's, # doz.....\$18.00@50%
 National.....# doz., \$21.00, 30%
 Sargent's.....# doz., \$24.00, 60¢@10¢

Washer
 Appleton's.....# doz., \$16.00, 60¢@10¢@60¢@10¢
 Bonney's.....# doz., \$10.00, 30¢@10¢
 Cincinnati.....# doz., \$11.00, 35%
 Johnson's, # doz., \$11.00, 35%
 Penney's, # doz., \$11.00, 35%
 Smith's Pat., # doz., \$12.00, 20¢@10¢
 Tatum's.....# doz., \$12.00, 20¢@10¢

Diggers, Post Hole, &c.—
 Cronk's Post Bars, # doz., \$90.00, 40%
 Eureka Diggers, # doz., \$10.50@12.00
 Fletcher Post Hole Augers, # doz., \$36.00, 20¢@20¢10¢
 Gem, Improved, # doz., \$9.00@10.00 net
 Gibbs' Columbia.....# doz., \$12.00
 Gibbs' Hustler.....# doz., \$10.00
 Gibbs' Imperial.....# doz., \$7.50
 Gibbs' National.....# doz., \$7.50
 Gibb's Post Hole Digger.....# doz., \$12.75
 Kohler's Hercules.....# doz., \$12.00
 Kohler's Invincible.....# doz., \$10.00
 Kohler's Little Giant.....# doz., \$14.00
 Kohler's Champion.....# doz., \$7.50
 Kohler's Pioneer.....# doz., \$9.00
 Ryan's.....# doz., \$20.00, 10%
 Samson, # doz., \$34.00.....25¢@25¢10¢
 Universal.....# doz., \$15.00
 Shimer's Hollow Handle.....# doz., \$24.00, 50%

Vaughan's Post Hole Auger, # doz., \$8.50@9.50
Dividers—See Compasses.
Dog Collars—See Collars, Dog.
Door Checks—
 See Checks, Door.
Door Springs—
 See Springs, Door.
Drawers, Money—
 Money Drawers, # doz., \$18@20
 Wadell's Improved, No. 1, # doz., \$15.00
 Wadell's Improved No. 2, # doz., \$18.00
 Wadell's Comb, Cutlery Case and Alarm Till.....\$12.50

Drawing Knives—
 See Knives, Drawing.

Drills and Drill Stocks—
 Automatic Boring Tools.....\$1.75@1.85
 Bench Drills, Stearns's.....each \$1.60
 Blacksmiths' Self Feeding, each \$7.50
 Breast, Bartholomew's, No. 12, # doz., \$10.00
 Breast, Millers Falls.....each \$3.00, 25%
 Breast, P. S. & W.....40¢@10¢
 Breast, Wilson's.....30¢@5¢
 Catcher, Automatic Drill.....40¢@5¢
 Goodell Automatic Drills.....40¢@5¢
 Hatchet, Curtis & Curtis.....30%
 Hatchet, Ingersoll's.....25%
 Hatchet, Merrill's.....20¢@20¢5¢
 Hatchet, Moore's Triple Action.....25¢@30¢
 Hatchet, Parker's.....20¢@20¢5¢
 Hatchet, Weston's.....20¢@25¢
 Hatchet, Whitney's.....20¢@25¢
 Whitneys Hand Drill, Plain, # doz., \$11.00
 Adjustable, \$12.00.....20¢@10¢

Twist Drills—
 Cleveland.....50¢@10¢@10¢
 Diamond, W. & B.....50¢@10¢@10¢
 Graham's Pat. Groove Shank, 50¢@10¢@10¢
 Morse.....50¢@10¢@10¢

New Process
 Standard.....50¢@10¢5¢
 Syracuse (Metal list).....50¢@10¢5¢
Drill Bits or Bit Stock
Drills—See Augers and Bits.
Drill Chucks—See Chucks.
Dripping Pans—
 See Pans, Dripping.
Drivers, Screw—
 Allard's Spiral.....50%
 Race Screw Drivers.....25¢@10¢
 Buck Bros' Screw Driver Bits.....30%
 Clark's Pat.....38¢@40¢
 Cincinnati.....25¢@10¢
 Champion.....25¢@10¢
 Disston's.....50%
 Douglas Mfg. Co.....20¢@20¢10¢
 Electric Spiral.....50%
 Elrich's Sucker and Ratchet.....27¢@25¢
 Fray's Hol. H'dle Sets, No. 3, \$12.00, 45%
 Gay & Parsons.....35%
 Goodell's Automatic.....50¢@10¢5¢
 Howard-Allard.....50%
 Jones Reversible.....40%
 Knab & Cowles
 No. 1.....70¢@10¢
 No. 2.....70¢@10¢
 No. 3.....60¢@10¢
 Nos. 4 and 00, Acme and Ideal, 60¢@10¢
 Kolb's Common Sense, # doz., \$6.00, 25¢@10¢
 Mayhew's Black Handle.....25¢@10¢
 Mayhew's Monarch.....45¢@10¢
 P. S. & W.....70%
 Sargent & Co's
 No. 1, Forged Blade.....60¢@10¢@10¢
 Nos. 20, 40 and 60.....60¢@10¢@10¢
 Screw Driver Bits, Farr's, # gross, \$6.25
 Stanley R. & L. Co's
 No. 64, Varnished Handles.....65¢@10¢
 No. 86.....70¢@10¢
 Stearns's.....25¢@10¢5¢
 Syracuse Screw-Drive Bits.....30¢@30¢5¢
 C. T. Williamson Wire Novelty Co.....60%

Egg Beaters—See Beaters, Egg.
Egg Poachers—
 See Poachers, Egg.
Electric Bell Sets—
 See Bells, Electric.

Emery—No. 1 to No. 54 to Flour, CF
 48 gr. 150 gr. K.F.F.
 Kegs, # doz.....45¢ 5 3 3
 1/2 kegs, # doz.....54¢ 5 3 3
 1/4 kegs, # doz.....54¢ 5 3 3
 10-cans, 10 in case.....6 6 6 5 5
 10-cans, less than 10.....10 10 8 8

Enamelled and Tinned Ware—See Ware, Hollow.
Escutcheon Pins—
 See Pins, Escutcheon.
Escutcheons—
 Brass Thread.....60¢@60¢10¢
 Door Lock.....Same dis. as Door Locks.
 Wood.....25%

Expanded Metal—
 List No. 5.
 Door Mats, Galvanized.....25%
 Fencing, Painted Sheets.....20%
 Lighting.....10%
 Netting, Painted Sheets.....20%
 Tree Guards, Paneled.....15%
 Window Guards, Paneled.....15%

Extractors, Lemon Juice—
 See Squeezers, Lemon.

Fasteners, Blind—
 Austin & Eddy, # gr. sets.....\$5.50
 MacKrell's, # doz.....\$1.00, 20¢@20¢10¢
 Security Gravity.....# gr., \$7.50
 Van Sand's Old Pat., \$15 # gr.....55¢@10¢
 Van Sand's Sew Pat., \$15 # gr.....60¢@10¢
 Zimmerman's.....50%

Faucets—
 B. & L. B. Co.
 West's Lock, Open and Shut Key.....50%
 Burnside's Red Cedar.....50%
 Burnside's Red Cedar, bbl lots.....50¢@10¢
 Cork Lined.....70¢@70¢10¢
 Fern's Cork Stops.....40%
 Fern's Pat. Petroleum.....35¢@4¢
 Metallic Key, Leather Lined.....60¢@10¢
 National Measuring, # doz., \$36.00, 25¢@10¢
 John Sommers' Block Tin Key.....40%
 IXL, 1st quality, Cork Lined.....50%
 Diamond Lock.....40%
 Perfection, Fla. Red Cedar (in boxes).....40%
 Boss Metallic Key.....40%
 Reliable Cork Lined.....60%
 O. E. Western Pattern Cork Lined.....50%
 No Brand, Red Cedar (in bbls.).....60¢@10¢
 Western Pattern Metal Key.....40%
 No Brand Metal Key.....60%

Self Measuring
 Enterprise, # doz., \$36.00.....25¢@10¢
 Lane's # doz., \$36.00.....25¢@10¢
 Star.....80%
 Lock, Metal Plug, new list.....40%
 Starrett, Metal Plug, reduced list.....60%

Felice Plates—
 See Plates, Felice.
Fibre Ware—See Ware, Fibre.
Fifth Wheels—
 Brastetter's.....50¢@5¢
 Derby and Cincinnati.....45¢@5¢

Files—Domestic—
 American.....70¢@70¢10¢
 Arcade.....80¢@10¢@10¢70¢
 G. & H. Barnett (Black Diamond).....80¢@10¢@10¢70¢
 Eagle.....80¢@10¢@10¢70¢
 Nicholson Files, Rasps, &c. 60¢@10¢10¢
 Nicholson (X.F.) Files.....25%
 Nicholson's Royal Files (Seconds).....75%
 (extra prices on certain sizes.)
 Other makers, best brands.....70¢@70¢10¢
 Fair brands.....75¢@75¢5¢
 Second quality.....80¢@80¢10¢
 Arcade Horse Rasps.....50¢@10¢@50¢
 Chelsea Horse Rasps, Hand Cut.....60¢@10¢
 Heller's Horse Rasps.....80¢@10¢
 McCaffrey's Horse Rasps.....50¢@10¢@50¢
 Trojan Horse Rasps.....60¢@10¢@50¢

Imported—
 Butcher.....Butcher's list, 20%
 Rinde.....Stubbs' list 75¢@9¢

Fixtures Grindstone—
 Moore's.....65¢@10¢
 P. S. & W. Co.....50¢@10¢@10¢
 Reading Hardway Co. 30¢@10¢@10¢
 Sargent's Patent.....70¢@10¢@70¢@10¢@10¢
Fluting Machines—
 See Machines, Fluting.
Fodder Squeezers—
 See Squeezers, Fodder.

Forks—
 Hay, Manure, &c. Asso. List, 70¢@70¢@5¢
 Hay, Manure, &c. Phila. List, 80¢@80¢@10¢5¢
 Plated, See Spoons.

Frames—Saw—
 Red, Polished and Varnished, # doz., \$1.50, 25%
 White Vermont.....# gro., \$9.00@10.00
Screen, Window and Door—
 Bonanza Window Screens.....50¢@10¢
 Cortland.....40¢@40¢5¢
 Empire Fancy Screen Door, # doz., \$1.15
 Phillips' Window Screen Frames.....50¢@10¢@50¢@10¢@5¢
 Porter's Pat. Window and Door Frame.....35¢@210¢
 Stearns' Frames and Corners, 25¢@25¢10¢
 Wabash Adjustable Window Screen.....40¢@5¢

Warner's Screen Corner Irons, 35¢@10¢5¢
Freezers, Ice Cream—
 American.....60%
 Arctic.....70%
 Blizzard.....70%
 Boss and Pet.....60¢@10¢@10¢
 Buffalo Champion.....65%
 Confectioners' Machine.....80%
 Crown.....80%
 Double Action Crown.....80%
 Gem.....80%
 Giant.....80%
 Good Luck.....80%
 Granite State.....65%
 Keystone, P. D. & Co., each, \$1.50, 20%
 Model.....60%
 Ohio.....60¢@10¢
 Series.....60¢@10¢
 Shepard's Lightning.....60%
 Standard.....60%
 Standard Double Action.....60%
 Star.....60%
 White Mountain.....60%
 Zero.....70%

Frut and Jelly Presses—
 See Presses, Fruit and Jelly.
Fruit Pickers—
 See Pickers, Fruit.
Fry Pans—See Pans, Fry.
Funnels
 Gersdorff's Perfection, Standard and Globe, 7 1/2 in, 1 gro., 10¢; 2 to 5 gro., 20¢; 5 to 10 gro., 30¢
 Copper, 1 to 6 doz., 15¢; 6 to 12 doz., 20¢; over 12 doz., 25%

Furnaces, Soldering—
 Burgess Nos. 3, 4 and 5 Gem, Copper reservoir.....\$8.50
 Burgess Nos. 3, 4 and 5 Gem, tin reservoir.....\$7.00
 Clayton & Lambert No. 1 Fire-Pot, \$6.00; No. 2 Fire-Pot.....\$12.00
Fuse—Dis. 10¢@2¢ cash. # 1 1000 ft. Common Cotton Fuse, for dry grnd.....\$3.00
 Common Hemp Fuse, for dryground, 2.80
 Double Taped Fuse, for very wet gr., 5.00
 Single Taped Fuse, for wet ground, 4.75
 Triple Taped Fuse, for very wet gr., 6.40
 Large Gutta Percha Fuse, for water, 15.00
 Small Gutta Percha Fuse, for water, 10.00

Gates Molasses—
 Boss, # doz.:
 No. 1, \$7; No. 2, \$8; No. 3, \$9 No. 4, \$10.....70¢@70¢10¢
 Lincoln's Pattern.....60¢@10¢
 Stebbin's Genuine.....60¢@10¢
 Stebbin's Pattern.....80¢@10¢@10¢10¢
 Stebbin's Tinned Ends.....40¢@10¢
 Weed's.....20¢@10¢

Gauges—
 Barrett's Comb. Roller Gauge.....\$7.00@8.00
 Hoague & Peck's Champion Gauge, With Scale.....\$5.00
 Without Scale.....\$4.00
 Marking, Mortise, &c.....60¢@10¢
 Stanley K. & L. Co.'s Butt and Rabbit Gauge.....25¢@10¢
 Starrett's Surface, Center and Scratch.....25¢@10¢
 Wire, Brown & Sharpe's.....10¢@20¢
 Wire, Morse's.....25%
 Wire, P. S. & W. Co.....10¢@10¢
 Wire, Wheeler, Madden & Co.....10%

Glimets—
 Nail and Spike.....60¢@60¢5¢
 Diamond Glimets.....60¢@60¢10¢
 Eureka Glimets.....60¢@60¢10¢
 Double Cut, Douglas's.....40¢@10¢5¢
 Double Cut, Ives.....60¢@10¢@80¢@5¢
 Double Cut, Shepardson's.....45¢@10¢@45¢@10¢5¢

Glue—
 Dodd's Liquid Glue.....25¢@25¢5¢
 Improved Process.....25¢@25¢5¢
 Le Page's Liquid.....25¢@25¢5¢
 Upton's Liquid.....35%

Glue Pots—See Pots, Glue.
Grease, Axle—
 Axleline, tin boxes.....# gross \$12.00
 Dixon's Everlasting, 10-lb pails, ea. 85¢
 Dixon's Everlasting, in bxs., # doz 1 lb.....\$1.20; 2 lb \$2.00
 English Coach, 5-lb tin pails, # doz, \$3.50
 English Coach, wooden boxes.....# gross \$5.50
 Fraser's, kegs, half bbls, or bbl, # doz, 3¢4¢
 Fraser's, tubs.....# doz, 4¢; pails, 5¢
 Fraser's, small wood boxes.....# gro. \$9.50
 Fraser's 5 lb wood boxes.....per doz, \$3.25
 Lower grades, special brands.....\$5.50@7.00
 Tiger, 5-lb tin pails.....# gr \$5.50@7.00
 Tiger, wooden boxes.....# gross \$7.00

Grindstones—
 Family, regular list.....60%
 Family, Cleveland Stone Co.....20%

Grindstone Fixtures—
 See Fixtures, Grindstone.
Gun Powder—See Powder

Hack Saws—See Saws.
Hats Awl—
 Peg, Pat. Leather Top, # doz.....45¢@50¢
 Sewing, Pat. Plain Top, # doz.....40¢@45¢
 Sewing, Bra's Pat., # gr.....\$1.75
 Sewing, Pat. Long.....# doz \$1.30
 Sewing, Pat. Short, # doz.....45¢@50¢

Halters—	
Covert's Adj. Rope Halters.....	40¢25
Covert's Adj. Web Halters.....	35¢50
Covert's Hemp Horse and Cattle Tie.....	50¢10
Covert's Jute Cattle Ties.....	70¢10
Covert's Jute Horse Ties.....	70¢25
Covert's Rope, 7-16-in. Jute.....	70¢25
Covert's Rope, 1/2-in. Hemp.....	50¢25
Covert's Rope, Jute.....	60¢10
Covert's Saddlery Works Halters.....	33¢45
Covert's Saddlery Works Hand Wob. Halters.....	33¢45
Covert's Saddlery Works Horse and Cattle Ties.....	33¢45

Hammers—	
Handled Hammers—	
Atha Tool Co.....	50¢10
Buffalo Hammer Co.....	50¢10
Humason & Beckley.....	50¢10
Verree.....	50¢10
Cheney's Claw.....	40¢10
Cheney's Machinist's & Riveting.....	50¢50
C. Hammond & Son.....	40¢10
Magnetic Tack, Nos. 1, 2, 3, 4.....	1.25 1.50 1.75
Maydole's, list Dec. 1, 88.....	25¢10
Peck, Stow & Wilcox.....	40¢40
Fayette R. Plumb.....	40¢12
Artisan's Choice, A. E. Nail.....	40¢12
Engineers' and B. S. Hand.....	60¢ 5
Machinist's Hammers.....	60¢10
Regular Y. & P. A. E. Nail.....	40¢12
Other Hammers.....	50¢50
Sargent's.....	40¢10
Warner & Nobles, new list.....	25¢10

Heavy Hammers and Sledges—	
8 lb. and under.....	40¢
10 lb. and under.....	50¢
12 lb. and under.....	60¢
15 lb. and under.....	70¢
20 lb. and under.....	80¢
25 lb. and under.....	90¢
30 lb. and under.....	1.00
35 lb. and under.....	1.10
40 lb. and under.....	1.20
45 lb. and under.....	1.30
50 lb. and under.....	1.40
55 lb. and under.....	1.50
60 lb. and under.....	1.60
65 lb. and under.....	1.70
70 lb. and under.....	1.80
75 lb. and under.....	1.90
80 lb. and under.....	2.00
85 lb. and under.....	2.10
90 lb. and under.....	2.20
95 lb. and under.....	2.30
100 lb. and under.....	2.40
105 lb. and under.....	2.50
110 lb. and under.....	2.60
115 lb. and under.....	2.70
120 lb. and under.....	2.80
125 lb. and under.....	2.90
130 lb. and under.....	3.00
135 lb. and under.....	3.10
140 lb. and under.....	3.20
145 lb. and under.....	3.30
150 lb. and under.....	3.40
155 lb. and under.....	3.50
160 lb. and under.....	3.60
165 lb. and under.....	3.70
170 lb. and under.....	3.80
175 lb. and under.....	3.90
180 lb. and under.....	4.00
185 lb. and under.....	4.10
190 lb. and under.....	4.20
195 lb. and under.....	4.30
200 lb. and under.....	4.40
205 lb. and under.....	4.50
210 lb. and under.....	4.60
215 lb. and under.....	4.70
220 lb. and under.....	4.80
225 lb. and under.....	4.90
230 lb. and under.....	5.00
235 lb. and under.....	5.10
240 lb. and under.....	5.20
245 lb. and under.....	5.30
250 lb. and under.....	5.40
255 lb. and under.....	5.50
260 lb. and under.....	5.60
265 lb. and under.....	5.70
270 lb. and under.....	5.80
275 lb. and under.....	5.90
280 lb. and under.....	6.00
285 lb. and under.....	6.10
290 lb. and under.....	6.20
295 lb. and under.....	6.30
300 lb. and under.....	6.40
305 lb. and under.....	6.50
310 lb. and under.....	6.60
315 lb. and under.....	6.70
320 lb. and under.....	6.80
325 lb. and under.....	6.90
330 lb. and under.....	7.00
335 lb. and under.....	7.10
340 lb. and under.....	7.20
345 lb. and under.....	7.30
350 lb. and under.....	7.40
355 lb. and under.....	7.50
360 lb. and under.....	7.60
365 lb. and under.....	7.70
370 lb. and under.....	7.80
375 lb. and under.....	7.90
380 lb. and under.....	8.00
385 lb. and under.....	8.10
390 lb. and under.....	8.20
395 lb. and under.....	8.30
400 lb. and under.....	8.40
405 lb. and under.....	8.50
410 lb. and under.....	8.60
415 lb. and under.....	8.70
420 lb. and under.....	8.80
425 lb. and under.....	8.90
430 lb. and under.....	9.00
435 lb. and under.....	9.10
440 lb. and under.....	9.20
445 lb. and under.....	9.30
450 lb. and under.....	9.40
455 lb. and under.....	9.50
460 lb. and under.....	9.60
465 lb. and under.....	9.70
470 lb. and under.....	9.80
475 lb. and under.....	9.90
480 lb. and under.....	10.00
485 lb. and under.....	10.10
490 lb. and under.....	10.20
495 lb. and under.....	10.30
500 lb. and under.....	10.40
505 lb. and under.....	10.50
510 lb. and under.....	10.60
515 lb. and under.....	10.70
520 lb. and under.....	10.80
525 lb. and under.....	10.90
530 lb. and under.....	11.00
535 lb. and under.....	11.10
540 lb. and under.....	11.20
545 lb. and under.....	11.30
550 lb. and under.....	11.40
555 lb. and under.....	11.50
560 lb. and under.....	11.60
565 lb. and under.....	11.70
570 lb. and under.....	11.80
575 lb. and under.....	11.90
580 lb. and under.....	12.00
585 lb. and under.....	12.10
590 lb. and under.....	12.20
595 lb. and under.....	12.30
600 lb. and under.....	12.40
605 lb. and under.....	12.50
610 lb. and under.....	12.60
615 lb. and under.....	12.70
620 lb. and under.....	12.80
625 lb. and under.....	12.90
630 lb. and under.....	13.00
635 lb. and under.....	13.10
640 lb. and under.....	13.20
645 lb. and under.....	13.30
650 lb. and under.....	13.40
655 lb. and under.....	13.50
660 lb. and under.....	13.60
665 lb. and under.....	13.70
670 lb. and under.....	13.80
675 lb. and under.....	13.90
680 lb. and under.....	14.00
685 lb. and under.....	14.10
690 lb. and under.....	14.20
695 lb. and under.....	14.30
700 lb. and under.....	14.40
705 lb. and under.....	14.50
710 lb. and under.....	14.60
715 lb. and under.....	14.70
720 lb. and under.....	14.80
725 lb. and under.....	14.90
730 lb. and under.....	15.00
735 lb. and under.....	15.10
740 lb. and under.....	15.20
745 lb. and under.....	15.30
750 lb. and under.....	15.40
755 lb. and under.....	15.50
760 lb. and under.....	15.60
765 lb. and under.....	15.70
770 lb. and under.....	15.80
775 lb. and under.....	15.90
780 lb. and under.....	16.00
785 lb. and under.....	16.10
790 lb. and under.....	16.20
795 lb. and under.....	16.30
800 lb. and under.....	16.40
805 lb. and under.....	16.50
810 lb. and under.....	16.60
815 lb. and under.....	16.70
820 lb. and under.....	16.80
825 lb. and under.....	16.90
830 lb. and under.....	17.00
835 lb. and under.....	17.10
840 lb. and under.....	17.20
845 lb. and under.....	17.30
850 lb. and under.....	17.40
855 lb. and under.....	17.50
860 lb. and under.....	17.60
865 lb. and under.....	17.70
870 lb. and under.....	17.80
875 lb. and under.....	17.90
880 lb. and under.....	18.00
885 lb. and under.....	18.10
890 lb. and under.....	18.20
895 lb. and under.....	18.30
900 lb. and under.....	18.40
905 lb. and under.....	18.50
910 lb. and under.....	18.60
915 lb. and under.....	18.70
920 lb. and under.....	18.80
925 lb. and under.....	18.90
930 lb. and under.....	19.00
935 lb. and under.....	19.10
940 lb. and under.....	19.20
945 lb. and under.....	19.30
950 lb. and under.....	19.40
955 lb. and under.....	19.50
960 lb. and under.....	19.60
965 lb. and under.....	19.70
970 lb. and under.....	19.80
975 lb. and under.....	19.90
980 lb. and under.....	20.00
985 lb. and under.....	20.10
990 lb. and under.....	20.20
995 lb. and under.....	20.30
1000 lb. and under.....	20.40

Handcuffs and Leg Irons—	
See Police Goods.	

Handles—	
Cross-Cut Saw Handles—	
Atkins.....	40¢
Champion.....	15¢
Ely's Perfection.....	40¢
Sensible.....	40¢
Per doz. Pr.....	50¢

Iron, Wrought or Cast—	
Barn Door, 70¢1.40.....	20¢5
Bronze Iron Drop Latches.....	40¢
Chest, Sargent's list.....	50¢10
Door or Thumb.....	0
Nos.....	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100
Per doz.....	90¢1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00 2.10 2.20 2.30 2.40 2.50 2.60 2.70 2.80 2.90 3.00 3.10 3.20 3.30 3.40 3.50 3.60 3.70 3.80 3.90 4.00 4.10 4.20 4.30 4.40 4.50 4.60 4.70 4.80 4.90 5.00 5.10 5.20 5.30 5.40 5.50 5.60 5.70 5.80 5.90 6.00 6.10 6.20 6.30 6.40 6.50 6.60 6.70 6.80 6.90 7.00 7.10 7.20 7.30 7.40 7.50 7.60 7.70 7.80 7.90 8.00 8.10 8.20 8.30 8.40 8.50 8.60 8.70 8.80 8.90 9.00 9.10 9.20 9.30 9.40 9.50 9.60 9.70 9.80 9.90 10.00

Jap'd Store Door Handles—	
Plate, 1.10; no plate, 0.88.....	1.10
Roggin's Latches.....	25¢

Wood—	
Auger, assorted.....	50¢
Auger, large.....	70¢
File, assorted.....	2.75
Brad Awl.....	2.00
Apple Firmer Chisel, ass'd.....	5.00
Apple Firmer Chisel, large.....	6.00
Hickory Firmer Chisel, ass'd.....	5.00
Hickory Firmer Chisel, large.....	6.00
Socket Firmer Chisel, ass'd.....	5.00
Socket Framing Chisel, ass'd.....	6.00
Chisel, Hammer Head.....	3.34
Hammer, Hatchet, Axe, &c.....	4.00
Hoe, Rake, Shovel, &c.....	6.00
Pat. Auger, Ives.....	30¢10
Pat. Auger, Swan's.....	30¢10
Saw and Plane.....	40¢10

Hangers—	
Barn Door, New England.....	70¢70
Barn Door, old patterns.....	70¢70
Barry.....	50¢
Best Anti-Friction.....	60¢10
Carrier Steel Anti-Friction.....	60¢10
Champion.....	60¢10
Chicago Anti-Friction.....	60¢10
Climax Anti-Friction.....	60¢10
Cincinnati Nos. 1, 2, 25; 3, 25; 4, 25.....	60¢10
Crescent.....	60¢10
Cronk's Patent, Steel Covered.....	60¢10
Duplex (Wood Track).....	60¢10
Economy, 6.00.....	60¢10
Hamilton Wrought Steel Track.....	60¢10
Interstate.....	60¢10
Kidder's.....	60¢10
Lane's New Standard.....	60¢10
Lane's Parlor.....	60¢10
Lane's Standard.....	60¢10
Lundy, Steel Parlor.....	60¢10
Magie.....	60¢10
Matchless.....	60¢10
Moody.....	60¢10
Moore's Baggage Car Door.....	60¢10
Moore's Elevator.....	60¢10
Moore's Railroad.....	60¢10
Nickel, Steel, Nos. 0, 25; 1, 25; 2, 25.....	60¢10
Orleans Steel.....	60¢10
Paragon Nos. 5, 6, 7 and 8.....	60¢10
Pendulum, Payson's.....	60¢10
Perfection.....	60¢10
Richards.....	60¢10
Samson Steel Anti-Friction.....	60¢10
Star.....	60¢10
Stearns' Anti-Friction.....	60¢10
Stearns' Challenge.....	60¢10
Sterling.....	60¢10
Terry's Ideal.....	60¢10
Terry's Modern.....	60¢10
Terry's Solid.....	60¢10
Terry's Wrought Single Strap.....	60¢10
Victor, No. 1, 15.00; No. 2, 15.00; No. 3, 15.00.....	60¢10
Warner's Pat.....	60¢10
Wild West.....	60¢10
Zenith for Wood Track.....	60¢10

Harness Snaps—See Snaps.	
Hatchets—	
American Axe and Tool Co.....	40 & 10
Blood's.....	40 & 10
Hunt's.....	40 & 10
Hurd's.....	40 & 10
Mann's.....	40 & 10
Underhill's.....	40 & 10
O. Hammond & Son.....	40 & 10
Fayette R. Plumb.....	40 & 10
Collins.....	40 & 10
Buffalo Hammer Co.....	40 & 10
Kelly's.....	40 & 10
P. S. & W. Co.....	40 & 10
Sargent's & Co.....	40 & 10
Shultz, Lohoff & Co.....	40 & 10
Ten Eyck Edge Tool Co.....	40 & 10

Hay and Straw Knives	
See Knives.	
Hinges—	
Blind Hinges—	
Clark's.....	75¢10
Nos. 1, 3, 5, 1888, Old Pattern.....	75¢10
Nos. 1 and 3, Tip Pattern.....	75¢10
No. 50 Buffalo Noiseless, 40, 60 and 65.....	75¢10
Buffalo Reversible, Nos. 3, 2, 1, 0, 1 and 0.....	75¢10
No. 1 Cottage, for wood only.....	75¢10
No. 1 Diamond, for wood only.....	75¢10
Dixie L. & P. Nos. 3, 2, 1, 0, 0, 4 and 5.....	75¢10
No. 25 Empire Reversible.....	75¢10
Lull & Porter, Nos. 3, 2, 1, 0, 0, 0, 4 and 5.....	75¢10
Mortise Gravity, Nos. 2, 4, 4, 6, 8, 9 and 10.....	75¢10
Huffer.....	75¢10
Parker.....	75¢10
North's Automatic Blind Hinges, No. 2, for Wood, \$9.00; No. 3, for Brick, \$11.50.....	75¢10
Reading Gravity.....	75¢10
Sargent's Nos. 1, 3, 5, 11, 12, 13.....	75¢10
Shepard's.....	75¢10
Acme, Lull & Porter, Nos. 3, 2, 1, 0, 1, 0, 0, 4 and 5.....	75¢10
Buffalo Gravity Locking, Nos. 1, 3 and 5.....	75¢10
Champion Gravity Locking, No. 75.....	75¢10
Clark's or Shepard's 1888, Old Pattern, Nos. 1, 3 and 5.....	75¢10
Clark's or Shepard's Tip Pattern, Nos. 1, 3 and 5.....	75¢10
Double Locking, Nos. 20 and 25.....	75¢10
Empire, Nos. 101 and 103.....	75¢10
Niagara Gravity Locking, Nos. 1, 3 and 5.....	75¢10
No. 50, 60, 65 and 55.....	75¢10
O. S. Lull & Porter, Nos. 3, 2, 1, 0, 0, 4 and 5.....	75¢10
Pioneer, Nos. 060, 45 and 55.....	75¢10
Steamboat Gravity Locking No. 10.....	75¢10

Gate Hinges—	
Automatic.....	12.50
Clark's, Nos. 1, 2, 3.....	60¢10
N. E. Reversible.....	60¢10
N. Y. State.....	60¢10
Shepard's Nos. 1, 2, 3.....	60¢10
Western.....	60¢10

No. 30	Buffalo Noiseless, 40,	60
and 65		75%
Buffalo	Reversible, Nos. 3, 2, 1½,	
1 and 0		70 & 5%

Plate.....45¢
Bomere's Night Latches.....15¢
 B. & E. Mfg. Co., list Mar. 80, 1889.....60¢10¢70¢
Sargent & Co., List July, 1894. 60¢10¢70¢
Warner's Burglar Proof. # dos. \$3.00, 50¢

Elevator—

Moore's.....83¢4¢

Padlocks—

Wrought Iron Padlocks:
 Brittan, Graham & Mathes, list Jan., 1894.....75¢
 Mallory, Wheeler Co., list Jan. 1, 1894.....75¢
 Norwich Lock Mfg. Co., list June 10, 1891.....50¢25¢
 Russell & Erwin Mfg. Co., list June 10, 1891.....50¢25¢
 Sargent & Co., list January 1, 1894.....75¢
 William Wilcox Mfg. Co., list January 1, 1894.....75¢20¢
Ames Sword Co. up to No. 103 inclu. 50¢
Ames Sword Co. above No. 103. 50¢10¢
Barnes Mfg. Co......40¢40¢10¢
Champion Padlocks......40¢
 A. E. Deitz.....40¢
 Eagle.....40¢
 Eureka, Eagle Lock Co.....40¢25¢
 W. T. Fram's Keystone Scandinavian.....100 line.....90¢50¢
 120 line.....90¢50¢
 109 line.....65¢
 510 line.....70¢10¢
 225, 610 and 200 lines.....70¢
 All other numbers.....50¢5¢
Horsehoe. # dos \$9.50¢60¢10¢
Hotchkiss......30¢
Knock's......30¢
Knock's No. 0 to 91......30¢
Bomer's Scandinavian, & Co., Nos. 100 to 505......30¢50¢
Scandinavian......30¢50¢
Maymaker, Barry & Co......90¢
 No. 41 line.....50¢
 No. 81 line.....60¢
 No. 21 line.....70¢
 No. 109 line.....90¢40¢
Star......60¢
Yale Lock Mfg. Co.'s......net prices

Sash, &c.—

Attwell Mfg. Co.....25¢39¢4¢
 Champion Safety list January 1893.....70¢5¢
 Clark's No. 1, \$10; No. 2, \$8 gr.....50¢
 Common Sense, Jap'd, Cop'd and Br'ed.....# gr \$4.00
 Common Sense, Nickel Plated.....# gr \$10.00
 Corbin's Daisy, list Feb. 15, 1893.....70¢
 Davis Bronze, Barnes Mfg. Co.....60¢
 Ferguson's.....39¢4¢
 Fish (Leeche's pat.), No. 100, # gr, \$8.....50¢
 No. 105, # gr, \$10.....50¢
 Giant, list Jan. 1892.....70¢10¢
 Hammond's Window Springs.....40¢
 Hagunin's New Sash Locks.....25¢5¢2¢
 Hagunin's Sash Balances.....25¢5¢2¢
 Ives' Patent.....60¢10¢10¢60¢10¢5¢
 Kempshall's Gravity.....60¢
 Kempshall's Model.....60¢60¢10¢
 Monarch.....60¢
 Payson's Perfect.....60¢10¢10¢
 Reading.....60¢10¢10¢10¢10¢
 Security.....70¢
 Universal.....30¢
 Victor.....60¢10¢2¢
 Walker's.....10¢
 Wolcott's.....60¢10¢5¢

Lumber Tools—

See Tools, Lumber.

Lustro—

our-ounce bottles.....# dos, \$1.75; 5¢ gross.....\$17.00

Machines.

Boring—

Without Angers. Upright. Angular.
 Boss, Carpenters' 8.80
 Boss, Ship Bldrs' 3.85
 Douglas.....\$5.50 \$8.75.....50¢
 Jennings.....5.50 6.75.....50¢50¢5¢
 Millers Falls.....7.50.....25¢
 Phillips' Patent.....7.50.....25¢
 with Anger 7.00 7.50.....40¢10¢10¢
 Small's, Rice's Pat 5.50 6.75.....40¢10¢10¢

Fluting—

American, 5 in., \$3.00; 8 in., \$3.40; 7 in., \$4.50 each.....35¢
 Combined Fluter and Sad Iron.....# dos \$15.00.....30¢
 Crown, 4 1/2 in., \$3.50; 6 in., \$4.00; 8 in., \$5.50 each.....35¢
 Crown Hand Fluter, No. 1, \$15.00; 2, \$12.50; 3, \$10.00; 4, \$8.25.....30¢
 Crown Jewel, 6 in.....\$3.50 each, 35¢
 Domestic Fluter.....each, \$1.50
 Eagle, 2 1/2-inch Rolls, \$2.15.....85¢
 Eagle, 3 1/2-inch Rolls, \$2.85.....35¢
 Knott, 4 1/2-inch Rolls.....\$3.25 each, 35¢
 Knott, 6-inch Rolls.....\$3.60 each, 35¢

Holisting—

Moore's Anti-Friction Differential Pulley Block.....20¢
 Moore's Hand Holist, with Lock Brake.....20¢
 Moore's Rope Differential Pulley Block.....30¢
 Morris & Beckley (Teal Patent).....30¢
 See also Blocks.

Washing—

Fair and Square.....# dos \$42.00
 Anthony Wayne, # dos, No. 1, \$42; No. 2, \$36; No. 3, \$42.....# dos \$36.00
 Wayne American.....# dos \$36.00
 Welsell.....# dos \$42.00
 Western Star # dos, No. 2, \$36 No. 3 \$39

Mallets—

B. & L. Block Co., Hickory & L. V. 30¢10¢40¢
Fibre Head, Stearns......33¢4¢
Hickory......20¢10¢20¢10¢10¢
Lignum......20¢10¢20¢10¢10¢

Mattocks—

Regular list.....60¢10¢60¢10¢5¢

Measures—

standard Fibreware, No. 1 peck 7 dosen, \$5.50; 1/4-peck, \$3.00

Meat Cutters—

See Cutters, Meat.

Menders—

Harness.....# doz., \$1.75

Hudson's Hose Menders, in set, # doz., \$6.00

Hudson's Hose Bands.....# gr., \$1.25

Milk Cans—See Cans, Milk.

Mills—

Box and Side. List Jan. 1893. 60¢10¢10¢

Net prices are often made which are lower than above discount.

American, Enterprise Mfg. Co., list Jan. 17, 1893.....20¢

National List, Jan. 1, 1894.....30¢

Swift, Lane Bros.....30¢

Waddell's New Box Mills, Ideal Brand, New List.....60¢60¢10¢

Mincing Knives—

See Knives, Mincing.

Molasses Gates—

See Gates, Molasses.

Money Drawers—

See Drawers, Money.

Mowers, Lawn—

Best.....\$4.00\$5.25 \$4.50\$6.00 \$5.00\$6.75

Good.....\$3.00 \$3.25 \$3.50

Cheap.....2.25 2.50 2.75

Muzzles—

Safety.....# dos, \$3.00, 25¢

Nails—

Cut and Wire. See Trade Report.

Wire Nails, Papered.

Association list, May 1, 1892.....85¢10¢5¢

Hungarian, Finishing, Upholsterers', &c. See Tools.

Horse—

Nos. 6 7 8 9 10

A. C.....25¢ 23¢ 22¢ 21¢ 21¢ 40¢10¢

American.....9¢ 9¢ 9¢ 9¢ 9¢.....35¢

Anchor.....23¢ 21¢ 20¢ 19¢ 18¢.....30¢

Ausable.....23¢ 23¢ 25¢ 24¢ 23¢.....40¢5¢2¢

Capewell.....19¢ 18¢ 17¢ 16¢ 16¢.....10¢5¢

C. B. K.....25¢ 23¢ 22¢ 21¢ 21¢.....40¢

Champion.....25¢ 23¢ 22¢ 21¢ 20¢.....10¢10¢10¢

Champion.....28¢ 26¢ 25¢ 24¢ 23¢.....40¢5¢2¢

Clinton, Fin.....19¢ 17¢ 16¢ 15¢ 14¢.....30¢5¢

Empire Bronzed.....1¢1¢1¢1¢1¢

Essex.....28¢ 26¢ 25¢ 24¢ 23¢.....40¢10¢50¢

Lyra.....9¢ 9¢ 9¢ 9¢ 9¢.....50¢10¢5¢

Maud S.....25¢ 23¢ 22¢ 21¢ 21¢.....50¢10¢5¢

Northwest'n.....25¢ 23¢ 22¢ 21¢ 20¢.....25¢5¢5¢

Putnam.....23¢ 21¢ 20¢ 19¢ 18¢.....15¢

Snowden.....9¢ 9¢ 9¢ 9¢ 9¢.....35¢

Standard.....23¢ 21¢ 20¢ 19¢ 18¢.....30¢

Vulcan.....23¢ 21¢ 20¢ 19¢ 18¢.....25¢

Western.....23¢ 21¢ 20¢ 19¢ 18¢.....25¢

Brass Head, Combination—

Brass Head, Sargent's list.....50¢10¢

Brass Head, Sargent's list.....60¢60¢10¢

Porcelain Head, Combination list.....40¢10¢

Porcelain Head, Sargent's list.....50¢10¢10¢

Niles' Patent.....60¢

Nail Pullers—See Pullers, Nail.

Nail Sets—See Sets, Nail.

Nippers—See Pliers and Nippers.

Nut Crackers—

See Crackers, Nut.

Nuts—List Dec. 18, 1889.

Square. Hex.

Cold Punched.....5¢4¢ 5¢4¢ off list

Hot Pressed.....6¢4¢ 6¢4¢ off list

In packages of 100 lb, add 1-10¢ # lb net; in packages less than 100 lb, add 1/4¢ # lb, net.

Oakum—

Best or Government.....# lb 6¢4¢

Navy.....# lb 6¢4¢

U. S. Navy.....# lb 6¢4¢

Oil Tanks—See Tanks, Oil.

Oilers—

Brass and Copper.....50¢10¢50¢10¢5¢

Zinc and Tin.....70¢70¢10¢

Broughton's Brass.....60¢

Broughton's Zinc.....60¢

Malleable, Hammers' Improved, No. 1, \$3.60; No. 2, \$4.00; No. 3, \$4.40.....10¢5¢

Malleable, Hammers' Old Pattern, same list.....50¢

Olmstead's Brass and Copper.....50¢

Olmstead's Tin and Zinc.....50¢

Prior's Pat. or "Paragon" Brass.....80¢

Prior's Pat. or "Paragon" Zinc.....80¢

Steel, Draper & Williams.....50¢

Wilnot & Hobbs Mfg. Co., Steel Anti-Rust.....60¢

Openers, Can—

American.....# gross \$1.75\$2.20

Champion.....# dos \$2.00.....50¢

Domestic.....# dos \$2.00.....45¢

Duplex.....# dos \$2.00.....45¢

Eureka.....# dos \$2.50.....40¢

Excelsior, No. 1 \$2.50; No. 2, \$1.50.....40¢

French, No. 4.....# dos \$2.25, 55¢60¢

Iron Handle, No. 5.....# gr \$6.00, 45¢50¢

Lyman's.....# dos \$3.75, 20¢

Messenger's Comet.....# dos \$3.00, 25¢

Moore's.....# dos \$2.75\$3.00

Sardine Sissors.....# dos \$2.75\$3.00

Sprague, No. 1, 55¢; 2, 60¢; 3, 65¢; Star.....# dos \$2.75

Streeter's.....50¢10¢

Sensible, Japanned, per doz.....70¢

Sensible, Nickel, per doz.....70¢

Surprise, per doz.....70¢

Newsprague, Metallic'd, per doz.....50¢

New Sprague, Wood H'dle, per doz.....80¢

Universal, # dos \$3.00.....55¢5¢

World's Best # gross, No. 1, \$12.00; No. 2, \$24.00; No. 3, \$36.00.....50¢10¢

Packing, Steam—

Rubber—

Standard, fair quality.....70¢10¢75¢

Inferior quality.....75¢10¢75¢

Extra.....80¢60¢10¢5¢

Jenkins' Standard.....80¢60¢10¢5¢

N. Y. B. & P. Co., Double Diamond.....80¢

N. Y. B. & P. Co., Salamander.....80¢

N. Y. B. & P. Co., Carbon.....70¢5¢

Miscellaneous—

American Packing.....9¢10¢

Cotton Packing.....14¢15¢

Italian Packing.....12¢13¢

Jute.....6¢7¢

Russia Packing.....13¢14¢

Pails—

Creamery—

S. S. & Co.: 18-qt., \$7.00; 20-qt., \$7.25

dos.....\$5

Galvanized Pails—

Light.....Heavy

10 Quart.....\$2.00\$2.25 \$2.25\$2.50

12 Quart.....2.25\$ 2.50 2.50\$ 2.75

14 Quart.....2.50\$ 2.75 2.75\$ 3.00

Galvanized Buckets—

Fire.....Well

10 Quart.....\$2.50\$2.75

12 Quart.....2.75\$ 3.00 2.25\$ 2.50

14 Quart.....3.00\$ 3.25 2.50\$ 2.75

Indurated Fiber Ware

Fire Pails, deep.....# doz \$4.80

Fire Pails, round bottom.....# doz \$5.40

Milk, 14 in.....# doz \$5.40

Stable, 14 qt.....# doz \$6.00

Star Pails, 12 qt.....# doz \$4.20

Standard Fiber Ware—

Buggy Pails.....\$3.00

Chamber Pails, 14 qt.....6.00

Dairy Pails.....# doz 3.75

Fire Pails, No. 1, 12 qt., # dos 3.75

Fire Pails, No. 2, 14 qt., # dos 4.25

Horse Pails.....4.00

Slop Jars (bal. trap).....7.50

Sugar Pails.....4.75

Water Pails, 12 qt., # dos 3.00

Pans—

Dripping—

Large sizes.....# 5¢

Small sizes.....# 5¢

Silver & Co. (Covered).....40¢

Fry—

Standard List:

No.....0 1 2 3 4 5

No.....\$5.00 \$3.75 \$4.25 4.75 \$5.25

No.....5 6 7 8 9

No.....\$6.00 \$7.00 \$8.00 \$9.00

Polished, regular goods.....75¢75¢10¢

Acme Fry Pans.....60¢

Dust—

Steel Edge, No. 1.....# dos \$1.75

Roasting and Baking—

Columbian S. S. & Co.: Nos. 10, \$2; 20, \$2.25; 30, \$2.50 each.....60¢10¢

Paper and Cloth—

Sand and Emery.....50¢10¢60¢

Sibley's Emery and Crocus Cloth.....30¢

Parers—

Apple—

Covert, New R. E. 60x10x5x2 1/2
Fitch's (Bristol) 60x10x5x2 1/2
German, new list. 40x10x5
Hotchkiss 10x
Kelley & Woolworth's Steel Harness 50x10x5x2 1/2
John Prots Patent 76x76x5 1/2
Bergant's Safety 70x10x1 1/2 @ 70x10x1 1/2

Snaths— 50x2x50x10x1 1/2

Snips, Tinner's— See *Shears*.

Soldering Irons— See *Iron, Soldering*.

Spittoons, Cuspidors, &c.

Standard Fiberglass— Cuspidors, 3 1/2 inch, 5 doz., No. 5, \$8; No. 6, \$9.

Spittoons, Daisy, 8-inch, No. 1, 10 and 11 inch, \$4.

Spoke Shaves— See *Shomes, Spoke*.

Spoke Trimmers— See *Trimmers, Spoke*.

Spoons and Forks— Tinned Iron.

Basting, Cen. Stamp. Co.'s list. 70x25x5

Buffalo, S. S. Co. 85x14x5

Solid Table and Tea, Cen. Stamp. Co.'s list. 70x25x5

Silver Plated— 4 months or 55 cash 80 days: 50x12x5 1/2

L. Boardman & Son 40, 15x5x5

Holmes & Edwards Silver Co. 40, 15x5x5

Meriden Brit. Co., Rogers 40x10x5x5

Reed & Barton 40x10x5x5

Rogers & Bros 40x10x5x5

C. Rogers & Bros 40x10x5x5

Rogers & Hamilton 40x10x5x5

Wm. Rogers Mfg. Co. 40, 15x5x5

Simpson, Hall, Miller & Co. 40, 15x5x5

Miscellaneous— Spoons, case lots

Boardman's Britannia 60x25x5x5

Boardman's Nickel Silver, list July 1, 1891 60x7x25x5

Britannia 60x60x25x5

German Silver 60x60x25x5

Nickel Silver 60x60x25x5

Holmes & Edwards Silver Co. 50x10x5x5

No. 24 German Silver 50x10x5x5

No. 30 Silver Metal 50x10x5x5

No. 49 Nickel Silver 50x10x5x5

No. 50 Nickel Silver 50x10x5x5

No. 67 Mexican Silver 50x10x5x5

Rogers & Hamilton 40x15x5x5

Cimeter, Steel Goods 40x10x5x5

Cimeter, Flatware and Cutlery 80x

Steel Goods 40x10x5x5

Wm. Rogers Mfg. Co. 60x25x5

18x Rogers' Hamilton Silver 60x25x5

22x Rogers' Nickel Silver 60x25x5

Rogers' Silver Metal 60x10x5x5

Champion (Coll) 55x10x55x10x5x5

Cowell's, No. 1, 5 doz \$18.00; No. 2, 15.00 50x50x10x5

Gem (Coll), list April 19, 1888 50x50x10x5

Hercules 39x4x39x4x5x5

Phoenix 50x50x10x5

Rubber, complete, 5 doz \$5.00, 6 doz \$7.00

Star (Coll), list April 19, 1888 20x10x5

Torrey's Rod, 80 in 5 doz \$1.20x1.25

Warner's No. 1, 5 doz \$1.50; No. 2, \$4.40 60x10x60x10x5x5

Victor 60x10x60x10x5x5

Carriage Wagon, &c.— Multiple, Concord, Platform and Half

Scroll 60x10x60x10x10x10 or net prices

Cliff's Bolster Springs 25x

Sprinklers, Lawn— Gibbs Arc 5 doz., \$12.00

Gibbs Hustler 5 doz., \$9.00

Squares— Nickel Plated 35x35x25x5

Steel and Iron 60x10x10x5

Try Square and T Bevels 50x

Avery's Bevel Protractor 50x

Avery's Flush Bevel Squares 40x

Diston's Try Square and T Bevels 50x

Starratt's Micrometer Caliper Squares 25x

Winterbottom's Try and Miter 30x10x5

Squeezers— Podder—

Blair's 5 doz \$2.00

Blair's "Olimax" 5 doz \$1.00

Lemon— Porcelain Lined, No. 1, 5 doz \$6.00

Wood, Common 50x11x70x17x5

Wood, No. 2 50x11x70x17x5

Dean's, No. 1, 5 doz \$5.50; 2, \$3.35; 3, \$1.90; Queen, \$2.50

Dunlap's Improved 50x \$3.75, 25x \$2.00

Hotchkiss Straight Flash 50x \$12.00

Jennings' Star 50x \$2.50

King 40x \$2.50

Little Giant 50x \$2.50

Mammoth, No. 1, \$5.00; No. 2, \$9; 12, \$18 50x 25x10x5

The Boss 50x \$2.50

Standard Fiber Ware— See *Ware, Standard Fiber*.

Staples— Barbed Blind, 1/4 in. and larger, 5 doz \$7.75x

Barbed Blind, 1/4 in. 5 doz \$8.50x

Fence Staples, Galvanized, 1/4 in. 5 doz \$8.50x

Fence Staples, Plain, 1/4 in. 5 doz \$8.50x

Grand Crossing Tack Co.'s list. 75x10x5

C. & A. Hoffmann's 40x

Nichols Bros 40x10x50x

Steelyards 40x10x50x

Stocks and Dies— Blacksmith's: Butterfield's Goods 85x

Waterford Goods 85x

Gardner 85x

Green River 85x

Lightning Screw Plate 25x80x

Beece's New Screw Plates 25x80x

Reversible Ratchet 80x

Stone— Stones, Grind—See *Grindstones*.

Scythe Stones, &c.— Pike Mfg. Co., list Apr. 1892, 33x45

Cleveland Stone Co., list Nov. 1892, 33x45

Fine Mfg. Co. 40x40x

Hindostan No. 1, 5 doz 50x

Sand Stone 40x40x

Turkey Oil Stone, 4 to 8 in. 80x

Turkey Slips 22.00

Lily White Washita 80x
Roly Red Washita 80x
Washita Stone, Extra 50x
Washita Stone, No. 1 40x
Washita Stone, No. 2 30x
Lily White Slips 80x
Roly Red Slips 80x
Washita Slips, Extra 80x
Washita Slips, No. 1 70x
Arkansas Stone, No. 1, 3 to 5 in. \$2.80
Arkansas Stone, No. 16, 5 to 8 in. \$3.50
Lake Superior 13x
Lake Superior Slips 20x
Tanite Mills: Emery Oil 5 doz., \$9.00, 50x65x

Stops, Bench— Cincinnati 25x10x5

Crescent 5 doz \$1.50

Hotchkiss 5 doz \$5, 10x10x10x5

McGills 5 doz \$3

Millers Falls 5 doz, No. 1, \$10.00; No. 2, \$11.00

Morrills 5 doz, No. 1, \$10.00; No. 2, \$11.00

Stearns 20x10x5

Terrell's Nos. 1 and 2, 5 doz., \$3; No. 3, \$3.50

Weston's, No. 1, \$10; No. 2, \$9.25x10x5x5

Stove Polish—See *Polish, Stove*

Stretchers, Carpe— Cast Steel, Polished 5 doz \$5x50x

Cast Steel, Polished 5 doz \$2.25

Socket 5 doz \$1.75

Ballard's 25x10x40x

Strops, Razor— Badger's Belt and Com. 5 doz \$2.00

Campbell Cutlery Co. Net prices

Electric Cutlery Co. 60x60x5x5

Emerson 60x60x5x5

Imitation 5 doz \$2.00, 20x10x5x5

Jordan's Pat. Padded, list Nov. 1, '89, 50x

Lamont Combination 5 doz \$4.00

Torrey's Net prices

Stuffer Sausage— Miles' Challenge, 5 doz \$5x50x5x5

Miles' Challenge, 5 doz \$5x50x5x5

Enterprise Mfg. Co., list Jan 17, '98, 25x

Silver's 40x10x5

Sweepers, Carpet and Lawn— Acme 5 doz \$2.00

Advance 5 doz \$1.80

Banner Jap'd, 5 doz \$2.00; Nickel, \$2.40

Grand 5 doz \$3.00

Gold Medal 5 doz \$2.70

Prize 5 doz \$2.70

Superior 5 doz \$2.70

Cosmopolitan 5 doz \$2.70

Furniture Protector, Nickel 5 doz \$2.70

Inter Ocean 5 doz \$2.70

Hall 5 doz \$4.80

Crown Jewel, No. 1, \$18.00; No. 2, \$19.00; No. 3, \$20.00

Domestic 5 doz \$2.00

Excelsior 5 doz \$2.00

Easy Jap'd, 5 doz \$2.00; Nickel, \$2.40

Garland 5 doz \$1.80

Gilt Edge 5 doz \$2.00

Grand Rapids 5 doz \$2.40

Grand Republic 5 doz \$2.40

Imperial 5 doz \$2.00

Improved Parlor Queen, 5 doz \$2.40

Japanned 5 doz \$2.40

Nickel 5 doz \$2.40

Ladies' Friend 5 doz \$1.50

Ladies' Friend No. 2 5 doz \$2.00

Parlor Queen 5 doz \$2.40

Our Leader 5 doz \$1.90

Our Own 5 doz \$2.00

Rapid Jap'd, 5 doz \$2.00; Nickel, \$2.40

Reliable 5 doz \$2.00

Select 5 doz \$2.40

Standard 5 doz \$2.40

Supreme 5 doz \$2.00

The Star 5 doz \$2.00

Triumph 5 doz \$2.00

Bissell Carpet Sweeper Co. make the following rebates: \$1.00 per doz. in 5 doz. lots, \$2.00 per doz. in 10 doz. lots.

Lawn— Thompson Mfg. Co. 30x

Swings— Davies Lawn 25x

Tacks, Brads &c.— List October 19, 1888. Old established straight weights. Short weight goods sold at lower prices.

Carpet Tacks— American, Blued 47x5x

American, Tin'd and Cop'd 52x5x

Steel, Bright and Blued 47x5x

Steel, Tinned and Coppered 52x5x

Swedes Iron, S. S., Tinned 47x5x

Swedes Iron, S. S., Tinned 47x5x

American Iron Tacks, Domestic 37x5x

American Iron Tacks, Foreign 50x

Swedes Iron Tacks— S. S., Blued 37x5x

S. S., Tinned 47x5x

Lanc. Blued 37x5x

Lanc. Tinned 37x5x

Upholsterers', S. S. 47x5x

Upholsterers', Lanc. 37x5x

Gimp Tacks— S. S., Blued 30x

S. S., Tinned 42x5x

Lanc. Blued 20x

Lanc. Tinned 20x

Basket and Trimmers' Tacks— Lanc. 20x

S. S. 30x

Hungarian Nails 35x

Common and Patent Brads 35x

Leathered Tacks 35x

Brick Tacks and Nails, S. S. 20x

Looking Glass Tacks, S. S. 5x

Picture-Frame Points, S. S. 12x5x

Lace Tacks Blued 12x5x

Lace Tacks, Tinned 20x

Finishing Nails 52x5x

Black and Clout Nails— Blued 52x5x

Tinned or Coppered 57x5x

Black Nails 37x5x

Chair Nails 85x

Cigar Box Nails 30x

Tin Capped Nails 50x

Shoe Finders' list, Apr. 14, 1894, 5x

F. H. Cobblers' Nails 18.85

4 1/2-8 in and shorter, 100 lb \$20.00

5 1/2-8 in and longer, 100 lb 18.85

C. S. Corrugated Brass Nails, or Flat Head Improved Brass Nails: No. 18 & 19 17x heavier

2-8 & 2 1/2-8 in \$60.00 \$41.20

3-8 & 3 1/2-8 in 61.50 35.15

Silver Plated, Hollow—
4 mo. or 5¢ cash in 30 days.
Meriden Britannia Co. 40¢
Reed & Barton. 40¢
Rogers & Brother. 40¢
Simpson, Hall, Miller & Co. 40¢
Hartford Silver Plate Co. 40¢
William Rogers Mfg. Co. 40¢

Washers—
Size hole..... 5-16 3/4 1/2 5/16 1/4
Washers..... 4.80 3.30 2.55 2.30
In lots less than 2000, 7¢ d. add 1/4¢, 1/2¢ boxes 1¢ to list.

Whips

American Whip Co.: Length.	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8 ft.
X. L. Whalebone Drivins.....	18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00
Bureka, Two-thirds Whalebone.....	15.00	16.50	18.00	20.00				
Bull Bone, Half-length Whale bone.....			11.00	12.00	13.00	15.00		
American Standard.....	8.00	8.50	9.50	10.50	12.00	13.50	15.00	16.50
True Grip, Raw Hide Center.....	6.00	6.00	6.50	7.00	7.50	9.00		
New Name, Stocked Java, Black and Wine Colors.....			6.00					
American, 93 Pen Whip.....			6.00					
Gents' Light Driving No. 111.....			6.00					
Gents' Light Driving No. 106.....			5.00					
Hand-made Stocked Java No. 103.....			3.75	4.00				
A large variety of cheaper grades.....								
Team Whips.....								
Toy Whips.....								
Hardware Assortment, 10/American, 75 Whips for \$50.00.								

Wire and Wire Goods—Iron

Br. & Ann., Nos. 0 to 18.
Nos. 0 to 18..... 75¢ to 10¢
Cop'd, Nos. 0 to 18..... 75¢ to 10¢
Galv. Nos. 0 to 18..... 70¢ to 10¢
Tin'd, Nos. 0 to 18..... 75¢ to 10¢

Washer Cutters—

See Cutters, Washers.

Water Coolers—

See Coolers, Water.

Wedges—

Steel..... 2 1/2¢ to 2 3/4¢

Weights Sash—

1 ton, \$14.50; 1 1/2 ton, \$21.50

Well Buckets Galvanized—

See Pails, Galvanized.

Wheels Well—

8 in., \$2.00; 10 in., \$2.50; 12 in., \$2.75

Galvanized Fence..... 75¢ to 10¢

Main's Brass and Cop. on Spools..... 50¢ to 55¢

Steel Music Wire, 13 to 30, imported..... 33 1/2¢ to 40¢

Stub's Steel Wire..... 60¢ to 70¢

Tate's Spooled, Tin'd & Annealed..... 60¢ to 65¢

Tate's Spooled, Top, and Brass..... 50¢

Tate's Spooled, 18 to 24, 7¢ d. add 1/4¢

Wire Clothes Line, see Lines.

Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list..... 90¢ to 95¢

Wire Cloth and Netting—

Galvanized Wire Netting..... 80¢ to 10¢

Painted Screen Cloth 100 ft \$1.45 to \$1.60

Wire Barb—

See Trade Report.

Wire Rope—See Rops, Wre.**Wrenches—**

American Adjustable..... 40¢ to 10¢

Baxter's Adjustable "S"..... 40¢ to 10¢

Cox's Genuine..... 50¢ to 10¢

Cox's "Mechanics"..... 50¢ to 10¢

Girard Standard..... 65¢ to 70¢

Lamson & Sessions' Engineers'..... 60¢ to 10¢

Lamson & Sessions' Agricultural..... 75¢ to 10¢

P. S. & W. Agricultural..... 80¢ to 85¢

W. B. Diamond..... 50¢ to 50¢

Acme, Bright..... 50¢ to 50¢

Acme, Nickel..... 40¢ to 45¢

Alkon's Pocket (Bright)..... \$2.00 to \$2.60

Alligator..... 60¢ to 10¢

Always Ready..... 33 1/2¢ to 40¢

Bemis & Call's:

Adjustable S..... 35¢ to 40¢

Brigg's Pattern..... 30¢ to 35¢

Combination Black..... 40¢ to 45¢

Combination Bright..... 45¢ to 50¢

Cylinder or Gas Pipe..... 45¢ to 50¢

Extra Heavy..... 45¢ to 50¢

Merrick's Pattern..... 45¢ to 50¢

No. 3 Pipe Bright..... 50¢ to 55¢

Bit Wrench, Adj., Tatum's..... 25¢ to 30¢

Boardman's..... 30¢ to 35¢

Cincinnati Brace Wrenches..... 55¢ to 60¢

Diamond Steel..... 20¢ to 25¢

Donohue's Engineer..... 20¢ to 25¢

Eagle..... 60¢ to 65¢

Hercules..... 70¢ to 75¢

Tate's Vice Wrench..... 55¢ to 60¢

Tatum's Brace..... 25¢ to 30¢

The Favorite Pocket, 7¢ d. add 1/4¢

Walker's..... 55¢ to 60¢

Webster's Pat. Combination..... 25¢

Wringers, Clothes—

In lots of less than one dozen.

Am. Wringer Co.'s list, July 2, '94. 25¢ cash

Colby Wringer Co., list May 1, '94. 25¢ cash

Lovell Mfg. Co., list July 2, 1892. 25¢ cash

Peerless Mfg. Co., list Feb., 1892. 25¢ cash

National Wringer & Mfg. Co., list June 1, 1892. 25¢ cash

Wrought Goods—

Staples, Hooks, &c., list, March 17, 1892

85¢ to 90¢

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable**Oils—**

Linseed, City, raw..... per gal.	50	50
Linseed, City, boiled.....	53	53
Linseed, Western, raw.....	48	50
Lard, City, Extra Winter.....	68	70
Lard, City, Prime.....	65	67
Lard, City, Extra No. 1.....	43	45
Lard, City, No. 1.....	43	45
Lard, Western, prime.....	63	65
Cotton-seed, Crude, prime.....	29	29
Cotton-seed, Crude, off grades.....	26	28
Cotton-seed, Summer Yellow, prime.....	34	34 1/2
Cotton-seed, Summer Yellow, off grades.....	32	33
Sperm, Crude.....	60	60
Sperm, Natural Spring.....	58	60
Sperm, Bleached Spring.....	63	63
Sperm, Natural Winter.....	63	63
Sperm, Bleached Winter.....	70	70
Whale, Crude.....	42	42
Whale, Natural Winter.....	42	42
Whale, Bleached Winter.....	44	44
Whale, Extra Bleached.....	46	47
Sea Elephant, Bleached Winter.....	21	22
Menhaden, Crude, Sound.....	21	22
Menhaden, Crude, Southern.....	25	26
Menhaden, Light Pressed.....	25	26
Menhaden, Bleached W'ter.....	33	34
Menhaden, Extra Bleached.....	36	36
Tallow, City, prime.....	62	62
Tallow, Western, prime.....	60	60
Cocoonut, Ceylon.....	74	74
Cocoonut, Ceylon.....	74	74
Cod, Domestic.....	30	30
Cod, Foreign.....	30	32
Red Elaine.....	35	38
Red Saponified.....	4 1/2	4 1/2
Bank..... per gal	25	28
Strait.....	53	54
White, Italian, bbls.....	60	62
Neatsfoot, prime.....	63	62
Palm, prime, Lagos.....	4 1/2	5 1/2

Mineral Oils—

Black, 29 gravity, 25 to 30 cold test..... per gal	6 1/2	7 1/4
Black, 29 gravity, 15 cold test.....	5 1/2	6 1/4
Black, 29 gravity, summer.....	7 1/2	8 1/4

Cylinder light, filtered.....	12	13
Cylinder, dark, filtered.....	10	12
Paraffine, 23 1/2 to 24 gravity.....	11	12
Paraffine, 25 gravity.....	9 1/2	10 1/2
Paraffine, 28 gravity.....	7 1/2	8 1/2
Paraffine, red.....	9 1/2	10 1/2

Paints and Colors—

Barytes, Foreign, 10 ton.....	\$22.00	\$24.00
Barytes, Amer. floated.....	29.00	\$32.00
Barytes, Amer. No. 1.....	16.00	18.00
Barytes, Amer. No. 2.....	15.00	18.00
Barytes, Amer. No. 3.....	11.00	12.00
Blue, Celestial.....	6	8
Blue, Chinese.....	40	50
Blue, Prussian.....	25	40
Blue, Ultramarine.....	8	25
Brown, Spanish.....	3 1/2	3 1/2
Brown, Vandyke, Amer.....	3	3 1/2
Brown, Vandyke, English.....	6	8
Carmine, No. 40, in bulk.....	2.00	2.00
Carmine, No. 40, in boxes or barrels.....	2.10	2.10
Carmine, No. 40, in ounce bottles.....	3.00	3.00
Chalk, in bulk.....	1.75	2.00
Chalk, in bbls.....	33	40
China Clay, English.....	10.00	18.00
Cobalt Oxide, prep'd.....	9.00	11.00
Cobalt Oxide, black.....	1.90	2.00
Cobalt Oxide, black.....	1.96	2.00
Green, Paris, in bulk.....	23	23
Green, Paris, 170 to 175.....	23 1/2	23 1/2
Green, Paris, small pack.....	25	29 1/2
Rebates.....	2 1/2	2 1/2
over 2 1/2¢ on lots of 10,000 lb or over.....	2 1/2	2 1/2
2000 to 4000 lb.....	1 1/2	1 1/2
1¢ on 500 to 1000 lb purchased during the season.....	6	12
Green, Chrome, ordinary.....	6	12
Green, Chrome, pure.....	22	25
Lead, Eng., B.B. white.....	5 1/2	5 1/2
Lead, Ann. White.....	4	4 1/2
Oil.....	5 1/2	5 1/2
Lead, White, in oil, 25 lb tin pails, add to keg price.....	1	1
Lead, White, in oil, 12 1/2 lb tin pails, add to keg price.....	1	1
Lead, White, in oil, 1 to 5 lb assorted tins, add to keg price.....	2 1/2	2 1/2

Lead, Red, bbls.....	4 1/2	5
Lead, Red, kegs.....	5	5 1/2
Litharge, kegs.....	4 1/2	5
Litharge, bbls, and 1/2 bbls.....	5	5 1/2
Ocher, Rochelle.....	1 1/2	1 1/2
Ocher, French Washed.....	1 1/2	1 1/2
Ocher, German Washed.....	1 1/2	1 1/2
Ocher, American.....	1 1/2	1 1/2
Orange Mineral, English.....	7 1/2	8
Orange Mineral, French.....	10	10 1/2
Orange Mineral, German.....	7 1/2	8
Orange Mineral, American.....	7 1/2	8
Red, Indian, English.....	5	15
Red, Indian, American.....	2	5
Red, Turkey.....	9	14
Red, Tuscan.....	7	10
Red, Venetian, American.....	70	100
Red, Venetian, English.....	110	135
Sienna, Italian, Burnt and Powd.....	4	5
Sienna, Ital., Burnt Lumps.....	1 1/2	3 1/2
Sienna, Ital., Raw, Powd.....	4 1/2	5 1/2
Sienna, Ital., Raw, Lumps.....	1 1/2	3 1/2
Sienna, American, Raw.....	1 1/2	1 1/2
Sienna, American, Burnt and Powd.....	1 1/2	1 1/2
Talc, French.....	1 1/2	1 1/2
Talc, American.....	1	1 1/2
Terra Alba, Fr'ch.....	65	75
Terra Alba, English.....	65	75
Terra Alba, American No. 1.....	65	75
Terra Alba, American No. 2.....	45	50
Umber, Turkey, Burnt and Powd.....	2 1/2	3 1/2
Umber, Turkey Bnt. Ln.....	2 1/2	3
Umber, Turkey, Raw and Powd.....	2 1/2	3 1/2
Umber, Turkey, R'w Lumps.....	1 1/2	1 1/2
Umber, Turkey, Bnt. Amer.....	1 1/2	1 1/2
Umber, Turkey, R'w Amer.....	1 1/2	1 1/2
Yellow, Chrome.....	10	25
Vermillion, American Lead.....	11	12
Vermillion, Quicks'er, bulk.....	43	44
Vermillion, Quicks'er, bags.....	44	44
Vermillion, Quicksilver sm'r.....	52	60
Vermillion, English Import.....	55	60
Vermillion, Imitation, Eng.....	8	30
Vermillion, Trieste.....	90	95
Vermillion, Chinese.....	85	100
Whiting Common.....	40	45
Whiting Gliders.....	60	65
Zinc, American, dry.....	3 1/2	4 1/2
Zinc, French, Red Seal.....	7	7 1/2

Zinc, French, Green Seal.....	8 1/2	9
Zinc, French, V. M. X.....	6	7
Zinc, Antwerp, Red Seal.....	6	6 1/2
Zinc, Antwerp, Green Seal.....	6 1/2	7 1/2
Zinc, German, L. Z. O.....	6	6
Zinc, V. M. in Poppy Oil, G Seal, lots of 1 ton and over.....	10 1/2	11
Zinc, V. M. in Poppy Oil, Red Seal, lots of 1 ton and over.....	10 1/2	11
Zinc, V. M. in Poppy Oil, lots of less than 1 ton.....	10 1/2	11
Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1 1/2; 25 bbls., 2 1/2; 50 bbls., 4 1/2. No discount allowed on less than bbl. lots.		

Colors in Oil—

Black, Drop, Frankfurt.....	25	30
Black, Drop, English.....	12	15
Black, Drop, Domestic.....	7	10
Black, Lampblack, Best.....	20	35
Black, Lampblack, Common.....	7	13
Black, Ivory.....	8	15
Blue, Chinese.....	35	45
Blue, Prussian.....	20	40
Blue, Ultramarine.....	12	18
Brown, Vandyke.....	7	12
Green, Chrome.....	8	13
Green, Paris.....	16	18 1/2
Sienna, Raw.....	7	14
Sienna, Burnt.....	7	14
Umber, Raw.....	7	10
Umber, Burnt.....	7	10

Putty—

In barrels and 1/2 bbls.....	0.15	0.15
In tubs.....	0.15	0.15
In tin cans.....	0.15	0.15
In bladders.....	0.15	0.15

Spirits Turpentine—

In regular bbls.....	28 1/2	28 1/2
In machine bbls.....	29	29 1/2

Glue—

OCTOBER 3, 1894.

Bar Iron from Store—

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